DOCUMENT RESUME

ED 124 801 CE 007 441

TITLE	Final RCA Staff Development Consulting Report for the D.C. Career Development Center--Phase II.
INSTITUTION	Radio Corp. of America, Dallas, Tex. Education Services.
SPONS AGENCY	District of Columbia Public Schools, Washington, D.C.
REPORT NO	VT-102-978
PUB DATE	9 May 74
NOTE	174p.; Pages 69-73, 79, 81, 84-85, 101-112 will not reproduce well in microfiche due to faded broken type
EDRS PRICE	MF-$0.83 HC-$8.69 Plus Postage.
DESCRIPTORS	Behavioral Objectives; Career Education; *Curriculum Development; Humanities; *Inservice Teacher Education; *Instructional Materials; Mass Media; *Material Development; *Performance Based Education; Post Secondary Education; Secondary Education; Staff Improvement; Teacher Improvement; *Teacher Workshops

ABSTRACT

The report summarizes the activities of a two-week workshop designed to teach the basic technique of developing competency-based curriculum materials. Participants were the staff of a proposed career development center for high school and postsecondary students. The workshops were conducted in February and March of 1974 and were Phase Two of a staff development program. Emphasized were the techniques for deriving learning competencies using behavioral analysis and the development of learning modules developed around measurable performance objectives. Individualism within the group setting was encouraged by allowing staff to focus on their areas of expertise within the two pilot career clusters: communications and media, and fine arts and humanities. Evaluation of the workshop was conducted by a participant self-assessment survey. Appendixes to the report (149 pages) contain the workshop schedule, materials prepared for participants, and results of the evaluation summary. The materials consist of handouts, information packets, exercises to be completed, guidelines for writing curriculum materials, and examples of four learning packages. Handouts upon which exercises were based include: the philosophy, goals, and program outlines of the center; behavioral analysis leading to competency statements; pre-assessment for writing performance objectives; and pre-assessment for validating performance objectives. (Author/RG)

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RCA

May 9, 1974

FINAL RCA STAFF DEVELOPMENT CONSULTING REPORT FOR THE D. C. CAREER DEVELOPMENT CENTER - PHASE II

Prepared for

D. C. Public Schools
Career Development Programs
415 12th Street, N. W.
Washington, D. C.

Prepared by

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RCA Education Services
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TABLE OF CONTENTS

PAGE

Introduction - Phase II 1

Objectives 2

Background Information 3

Participants 5

Description of Activities 6

Conclusions 23

Appendix A: Conference Schedules 24

Appendix B: (1) Three Staff Exercises on Career Development Center Philosophy, Goals, and Program Outlines 28

(2) Modified Recommendations on Philosophy, Goals, and Program Outlines 33

(3) Original Recommendations on Philosophy, Goals, and Program Outlines (Handout #1) 40

Appendix C: (1) Five Staff Exercises on Handout #2 58

(2) Handout #2 -- Behavioral Analysis Leading to Competency Statements 65

Appendix D: (1) Information Packet #1 -- Pre-Assessment for Writing Performance Objectives for Instruction 92

(2) Information Packet #2 -- Pre-Assessment for Validating Performance Objectives for Instruction 101

Appendix E: Five Staff Exercises on Developing Performance Objectives 113

Appendix F: Samples 119

(1) Guidelines for Developing Performance Objectives 120

(2) Performance Objective Checklist 123

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Appendix G: Classifying Performance Objectives 129

Appendix H: Tentative Format for Instructional Materials 135

(1) A Sample Format for Writing 136

(2) Definitions of Format Headings 140

Appendix I: Four Phase II Learning Package Examples 142

Appendix J: Participants' Self-Assessment Summary 167

FINAL RCA STAFF DEVELOPMENT CONSULTING REPORT
FOR THE D. C. CAREER DEVELOPMENT CENTER
PHASE II

This report presents the activities, accomplishments, and recommendations of a consulting team representing RCA Education Services, a part of RCA Service Company, a division of RCA Corporation. The information reported in this document represents the efforts of a two-week staff development program conducted with the management and instructional staff of the planned "Career Development Center" located at the National Geographic Building, 3rd and R Streets, N. W., Washington, D.C. This staff development program, Phase II, followed a Phase I effort which was initially conducted from August 20 through August 31, 1973, and from October 11 through October 12, 1973. The Phase II staff development program was conducted from February 25 through March 1, 1974 and from March 25 through March 29, 1974. Its major purpose was to continue assistance in the development of a pilot career education cluster program, specifically the Fine Arts & Humanities Cluster and Communications & Media Cluster. This two-week staff development program emphasized (1) the techniques for deriving learning competencies using behavioral analysis and (2) the development of learning modules developed around measurable performance objectives.

The staff development activities were conducted by Dr. T. C. Smith, Manager of Curriculum Research and Development; Dr. Robert Cain, Manager, Educational Planning; Dr. Charlotte Smith, a specialist in Curriculum Research and Measurement: Mr. Ed Devaney, a content specialist in Communications & Media; and Mr. Richard Butler, a Senior Curriculum Writer and Editor. Additional support and expertise were provided by staff members located in Dallas, Texas and Camden, New Jersey.

As continued steps necessary to the development of a comprehensive program for the Career Development Center in the two pilot clusters, the RCA consulting team concentrated on the major objectives listed below.

Objectives

1. To direct and establish a method for deriving competency statements or standards for program areas utilizing task analysis techniques.
2. To review relevant curricula and related research materials collected by school personnel since the completion of the Phase I staff and curriculum development conference (8-20-73 through 8-31-73).
3. To assist in establishing advisory committees and identifying community resources as support for the two clusters.
4. To establish guidelines for developing performance objectives.
5. To develop a recommended format for learning modules for both clusters.
6. To direct the writing of at least one learning module per program

area that is suitable for instructional purposes.

7. To conduct staff and management personnel self-assessment at the conclusion of Phase II.

Background Information

The Phase II staff development conference was a continuation of planning for the preparation of management and the instructional staff for the Career Development Center. Phase I resulted in bringing the staff together and cooperatively preparing a preliminary set of recommendations for facilities, program areas, Career Development Center Philosophy, and Career Development Center Goals. Phase I also resulted in the establishment of a more cohesive group since the planning for the programs of the Center became a "team effort" where ideas were shared in the best interest of the planned program. The establishment of this working relationship was by contrast quite apparent to the RCA staff, the attitude at the beginning of Phase II being noticeably different than at the beginning of Phase I. This apparent change of attitude within the staff thus allowed Phase II to progress on schedule as originally planned.

The RCA staff was quite disappointed that the "Workshops For Careers In The Arts" had secured program space at another location and thus would not be moving their program into the Career Development Center at the same time as the other programs. Their collective contribution during the first phase of staff development was most beneficial to the total effort and the two clusters appeared to have made much progress toward integrating their suggested programs for the Center.

Throughout the Phase II staff development conference the "openness" of the group was continually encouraged as it had been during Phase I. RCA believes that only through this concept of "openness" can real progress be made. Although several participants joined the conference during Phase II, this spirit of "openness" seemed to permeate into their working relationships with other staff members as well as RCA staff development personnel.

During Phase II a staff representative of the educational auditor Moran and Associates joined the staff development conference. Mr. Donald Pricer was present beginning Thursday noon, February 28, 1974 and again on Friday, March 1, 1974. He was also present during the second week of Phase II. Mr. Pricer was briefed generally on the activities of Phase I staff development and was informed where he might secure a copy of the Phase I report. He was also provided with copies of all conference materials that were distributed to each participant. Mr. Pricer was encouraged to participate in the conference activities so long as it was not disruptive to the conduct of the conference. He was invited to participate in the daily post-assessment sessions comprised of the RCA staff and the management staff representing the D. C. schools. His suggestions were most constructive and were taken under advisement.

Between Phase I and Phase II, Mr. George Gordon was assigned as the principal to the Career Development Center. Throughout both weeks' activities Mr. Gordon was present and participated in the conference activities. The RCA staff feels that his presence was most beneficial to the success of the conference for he could answer questions relating directly to internal problems of opening the Center. From the observations of the RCA staff, Mr. Gordon has excellent rapport with the instructional staff and this should add significantly to the success of the new Career Center.

Mrs. Ouida Maedel and Miss Josie Cole both attended each day's session, when possible. These two staff members and Mr. George Gordon worked with the RCA consulting team in implementing the daily activities. Their input on each day's activities was most helpful to the RCA staff in coordinating a more meaningful conference because of their day-to-day involvement in the D. C. schools.

Participants

The staff development conference began on Monday morning, February 25, 1974. The participants for this conference were essentially the same as those in Phase I except for the absence of the staff associated with the "Workshop For Careers In The Arts." Joining the staff development conference for the first time were the two following staff members:

Mrs. M. Rosborough - Drafting
Mr. Warren Brooks - Photography

Mrs. M. Rosborough was not present for the first week's activities; however, she was in attendance during the second week of Phase II. A complete listing of the workshop participants is presented on pages 4-6 of the Phase I report.

Description of Activities

To achieve the stated objectives of the staff development conference the RCA consulting team planned activities that were essentially participant-oriented. A schedule for each week's activities is presented in Appendix A.

A. As shown on the conference schedule, the first week of Phase II began with a general review of Phase I staff development activities. The participants, including those who were attending for the first time, reviewed the following materials to ascertain whether or not they felt changes were necessary.

- Career Development Center Philosophy
- Goals of the Career Development Center
- Programs for Each Pilot Career Cluster

Although a minimum of time was allotted to this activity, some suggestions and recommendations were made. This information was gathered by three exercises (see Appendix B) which were conducted in small groups consisting of participants from like program areas. The original recommendations (Handout 1) and modified recommendations are also presented in Appendix B. One would expect there to be additional changes as the Center grows to maturity and there should be flexibility in the Career Center plans to accommodate relevant changes.

Since the "Workshops For Careers In The Arts" have located their facilities outside the Career Center, it is recommended by RCA that consideration be given to expanding currently planned programs and adding other programs in the Fine Arts & Humanities. For example, a Music Program might be added since during the early planning phase (Phase I) the music program did not have space in the Career Center. This added space might allow for the Broadcasting and TV Production to be expanded.

It is the understanding of the RCA consulting team that some plans have already been made with regard to program expansion.

Following the first three exercises, the RCA consulting team presented information on the following:

- Individualized, continuous-progress learning systems
- Competency-based learning systems
- A model for developing competency-based instructional materials

After a general discussion of the above topics, the RCA teams presented a process model that would be used during the staff development workshop for developing learning modules or learning packages for the Career Center.

The following figure presents a schematic of the model that was used for the development of curricular materials. From Figure 1, the first two steps--Form Career Advisory Committee and Select Support Staff--were already accomplished by the D. C. schools. The staff development activities conducted by RCA in Phases I and II were to concentrate on the techniques necessary to accomplish steps 3 through 13 with the exception of detailed information on step 11, Developing Criterion Tests.

B. Deriving Learning Competencies. The second major set of activities was to utilize the process model, steps 3-5, to learn the techniques of deriving relevant learning competencies. The procedures used by the consulting team were first to allow the participants the opportunity to learn the basic methodology of behavioral analysis through reading, visual, and discussion exercises followed by the actual application of the learned techniques to their own content areas.

For this set of activities the participants were placed in like program areas so that common information and experiences could be shared, yet each participant was to perform all exercises himself. The five exercises and Handout 2--"Behavioral Analysis Leading to Competency Statements"--were utilized as the primary reference and work materials,

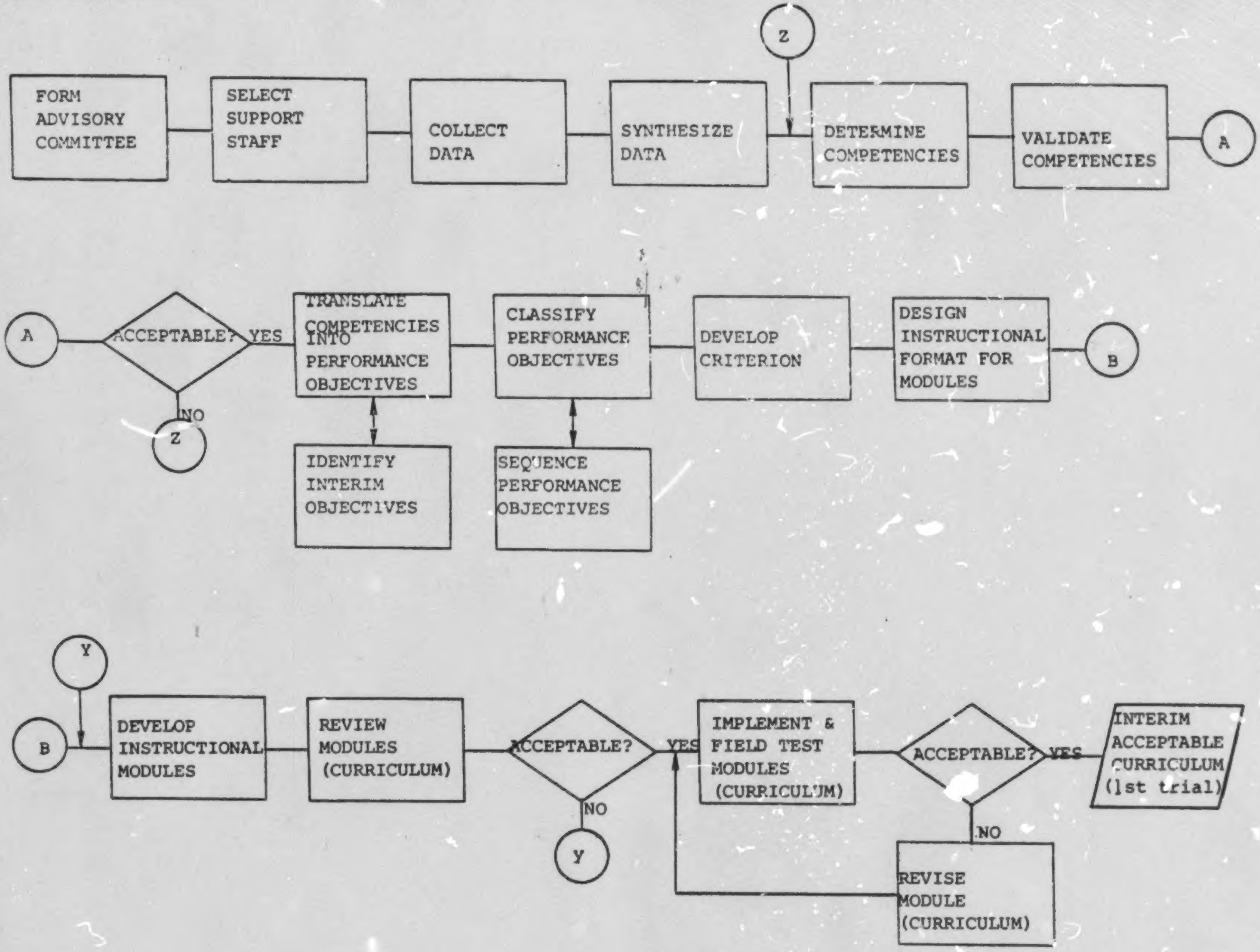
FORM ADVISORY COMMITTEE
SELECT SUPPORT STAFF
COLLECT DATA
SYNTHESIZE DATA
Z
DETERMINE COMPETENCIES
VALIDATE COMPETENCIES
A
A
ACCEPTABLE?
YES
NO
Z
TRANSLATE COMPETENCIES INTO PERFORMANCE OBJECTIVES
IDENTIFY INTERIM OBJECTIVES
CLASSIFY PERFORMANCE OBJECTIVES
SEQUENCE PERFORMANCE OBJECTIVES
DEVELOP CRITERION
DESIGN INSTRUCTIONAL FORMAT FOR MODULES
B
Y
B
DEVELOP INSTRUCTIONAL MODULES
REVIEW MODULES (CURRICULUM)
ACCEPTABLE?
NO
Y
YES
IMPLEMENT & FIELD TEST MODULES (CURRICULUM)
ACCEPTABLE?
YES
NO
REVISE MODULE (CURRICULUM)
INTERIM ACCEPTABLE CURRICULUM (1st trial)

FIGURE 1. PROCESS MODEL FOR CURRICULUM DEVELOPMENT

but were supported by overlays and discussions. The handout and set of five exercises are presented in Appendix C.

The basic procedures used by the consulting team throughout Phases I and II provided a continuum of learning experiences that were intended to relate directly to the staff's individual teaching areas of expertise in the Career Development Center. The behavioral analysis exercises were no exception. Each participant was allowed to use his own area of expertise to identify example competency statements for each program area within the cluster. From Tuesday through Thursday the participants systematically studied and applied behavioral analysis techniques to their areas of interest, which culminated in the derivation of competency statements. During this process considerable interaction occurred between the participants of: a cluster, the two pilot clusters and workshop personnel.

The products (competency statements) developed during this period were evaluated by RCA personnel and selected examples were also evaluated by the group as a whole. Using Handout 2 as the standard of reference, the group reached consensus on the form and level of specificity for competency statements.

C. Defining Performance Objectives. On Friday, March 1, 1974, the writing of performance objectives was discussed as the next logical step in the curriculum development process. This involves translating competency statements into behavioral or performance form. Some of the participants had prior knowledge of how to write performance objectives and how to classify them, whereas others had little or no experience; therefore the learning experiences continued with a self-assessment by each participant of his own knowledge and understanding of performance objectives. Two Information Packets (Appendix D) were distributed to each participant for their own self-evaluation and information. An answer key was provided to each participant following his completion of each packet. Following the completion of these two exercises an informal seminar or discussion group was formed to define and answer questions of the participants concerning the two exercises.

The first week's activities concluded with the participants being informed of the general activities to be conducted during the second week of Phase II staff development. In addition, a summary of the week's progress was provided using the process model for curriculum development.

D. Writing Performance Objectives. The second week of Phase II activities began with a very brief summary of behavioral analysis and a review of how the competency statements would be written in performance terms with acceptable criteria, this of course being one of the key points in competency-based instruction. That is, performance objectives are stated in measurable terms with a well defined criteria of acceptance for the performance statement.

The participants began the writing of performance objectives by simply choosing one of the competency statements from a previous exercise completed during the first week, and in their own words, stating how they would communicate in writing to the student what he is to learn. No formal instructions were afforded the participant by the RCA consulting team on the conventional method of writing performance objectives. The only instructions given the participants were those in Exercise 1 (Appendix E). After the participants had each written in their own words how they would precisely communicate to the student what he is to learn as a result of a learning experience, and how the student would be evaluated, a selected number of participants placed their results on flip charts for a critique by the group. It was seen that all written communications had basic components.

The consulting team then summarized the results into a general definition of a performance objective. A performance objective was identified as a communication device that stated:

- What the student will be able to do (behavior or performance).
- Circumstances under which the performance is to take place, i.e., the conditions.
- What degree of accuracy or standard for performance will be specified.

This general definition was a part of Exercise 2 (Appendix E). Although this is an accepted general definition of an objective, the consulting team felt it would be best to let the definition emerge from the group's writing experiences, as opposed to "telling" the participants the three parts of a "good" objective and then letting them fill in the parts or try to fit the competency statements into a pre-determined "mold." The writing and refinement of the performance objective written by each participant continued through Exercise 3. As the participants refined their objectives, it was decided by the group, with emphasis by the consulting team, that each performance objective should have a standard guideline to be used in the writing of objectives. The final product or sample Guidelines For Developing Performance Objectives is included as Appendix F. Within these guidelines a checklist is included for use in evaluating each performance objective that is developed as part of the future curricular materials. With the establishment of guidelines for writing performance objectives, the activities continued with Exercise 4 (Appendix E).

This exercise was designed to provide each participant with information on how to identify prerequisite behaviors for a specified objective and how to categorize behaviors according to a three-domain classification system--cognitive, psychomotor, and affective. The consulting team used handouts, audiovisuals, and small group discussions for this portion of the performance-objective writing exercise. Using the information obtained during presentations and the handout for Classifying Performance

Objectives (Appendix G), the participants continued to practice writing objectives for each of the three domains. This was accomplished in Exercise 5 (Appendix E). Thus, the activities of Monday through Wednesday were devoted to translating competency statements into performance objectives using established guidelines, and then to classifying each objective according to whether or not it was cognitive, psychomotor, or affective. Additionally, each objective was designated as to level within each domain.

The main emphasis of the consulting team was to focus all the activities upon relevant content materials familiar to each participant and thus increase the likelihood that each new learning experience would have maximum meaning to the participants instead of learning in terms of "educational jargon." After each participant felt that he had sufficient experience in writing an acceptable performance objective, the activities on Thursday continued with an introduction to the writing of learning modules, especially how the performance objectives and competencies are incorporated into the modules.

E. Writing Learning Modules. The activities of writing learning modules or learning packages began with an overview which was followed by a review of learning packages that previously had been developed by RCA as well as by other schools across the nation. Following a review of these learning packages the participants and RCA consulting staff developed a tentative format to be used for instructional materials for the Career Development Center. The recommended format for learning packages with an explanation of each of its components is found in Appendix H. After the tentative format was established, each participant developed in writing a learning package in his teaching area. Four of these packages are shown in Appendix J. These packages are the first drafts written by the participants.

F. Phase II: Participants' Self-Assessment. At the close of the second phase of the staff development workshop the participants were requested to assess the workshop using a questionnaire developed by the consulting staff. The questionnaire, presented in Appendix J, consisted of 24 forced-choice items and one essay item. The 24 forced-choice items pertained to three different aspects of the workshop--professional development of the participants, the methodology of the workshop, and recommendations for the future. The 25th item of the questionnaire requested elaboration about the strengths and weaknesses of the workshop and the future needs of the participants. Thus, by use of the questionnaire, feedback was provided the staff as to: (1) how the participants perceived the workshop in terms of assisting them in their professional development; (2) the effectiveness of various methodologies used within the workshop; and (3) the future needs of the participants as they prepare for the operation of the Center. The results of the questionnaire are summarized in the following paragraphs. The interpretations of the data are admittedly subjective; however, a tally of the responses for each item is reported in Appendix J to afford verification of the interpretations.

Professional Development:

Seven of the 24 items dealt directly with the participants' growth in the teaching profession as a result of attending the workshop. One of the most important variables in any educational endeavor is the feeling of relevancy and benefit that the endeavor enhances within each participant. The participant must feel that he personally gains from the learning experiences. The graph on the following page depicts the positive professional growth felt by the participants. Each of the seven items concerned with professional development are indicated on the horizontal line of the graph. The vertical line indicates the percentage of the participants who responded positively to the item.

All participants agreed that as a result of the workshop they felt more confident about developing curricular materials and that they had been provided the worthwhile opportunity to grow professionally (items 8 and 15). However, only 10% of the participants felt that they had progressed to the level of professionalism in curriculum development at which they could proceed without technical assistance (item 12). In the area of deriving competencies, 90% felt that they had the necessary skills to

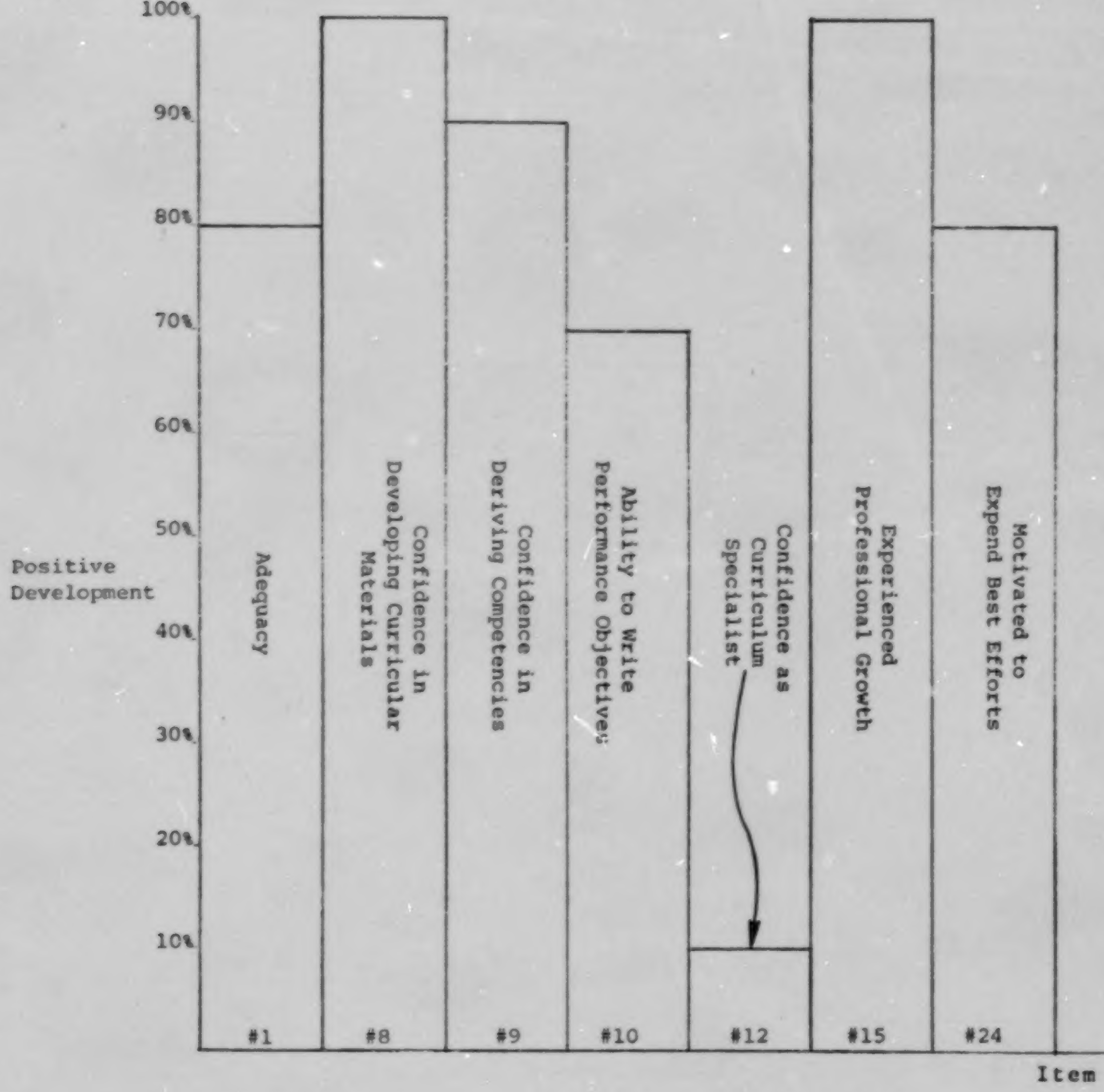

Fig. 2. Professional Development of Participants

be successful (item 9). However, in the area of writing performance objectives the self-confidence of the participants was not as marked (item 10). Eighty percent (80%) of the participants felt that the workshop was adequate in providing curriculum development information (item 1), and the same percentage viewed themselves as having been motivated to expend their best professional efforts throughout the workshop activities (item 24).

These responses indicate that while the workshop did not produce participants that felt confident as curriculum specialists, it was successful in increasing the confidence and skill of the instructors in the area of developing curricular materials for classroom use.

Workshop Methodology:

The RCA consulting staff is constantly striving to improve its effectiveness. Therefore, the preponderance of items within the questionnaire (14) related to the specific activities and methodologies used during the workshop. On the basis of the participants' evaluation of the workshop, revisions and refinements of the materials and activities are made. The responses of the participants, while perhaps being of more relevance to RCA personnel, are included in this report to share with all concerned the reaction of the participants to the various activities that were conducted. Such responses should not only indicate strengths and weaknesses to RCA but should assist district personnel in planning and implementing future workshops in various areas of concern. A graph of the responses, in the same format as the previous graph, is presented on the following page.

All of the participants (100%) agreed on the following: (1) they were

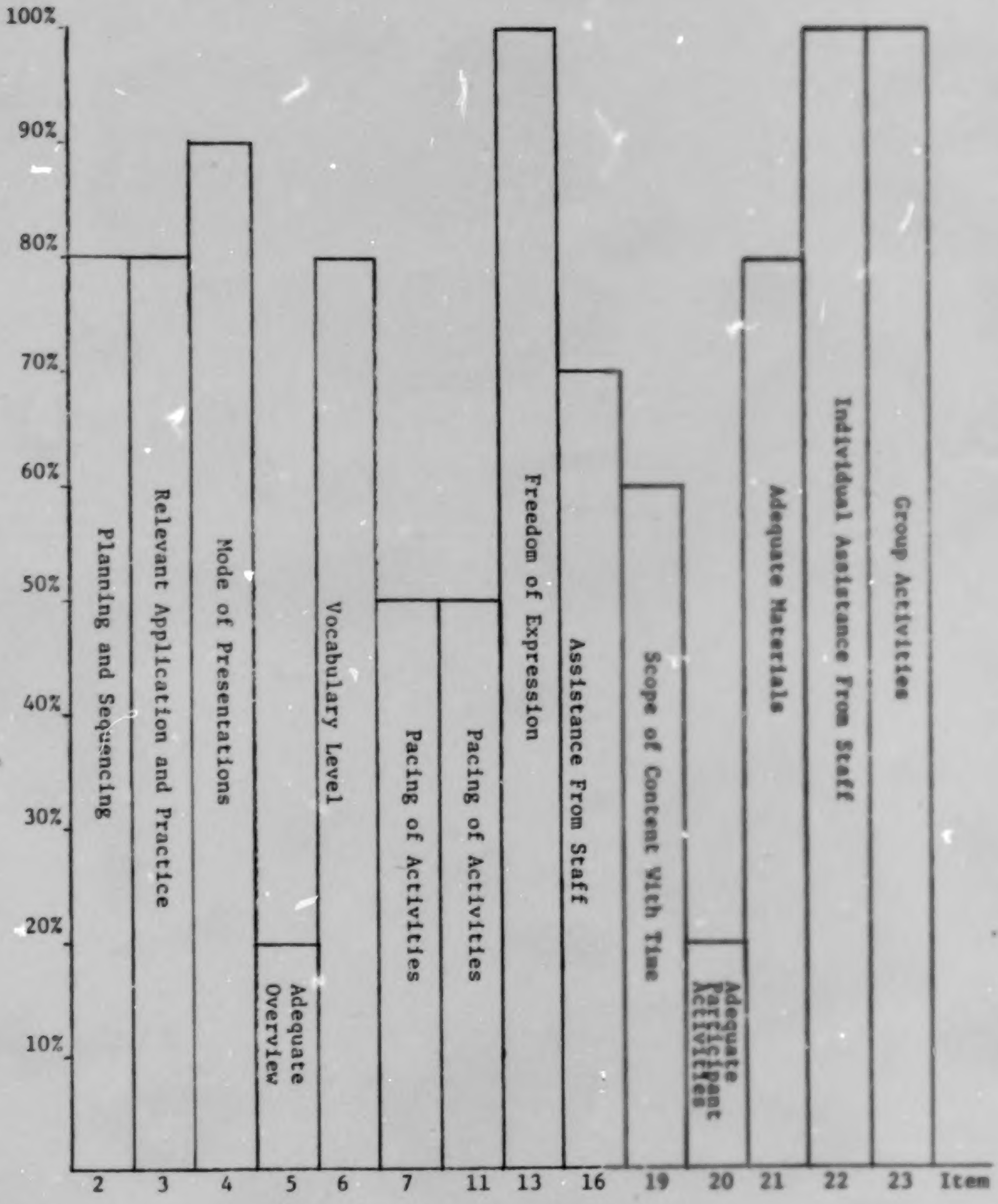

Fig. 3. Workshop Methodology

provided the opportunity to express openly and freely their opinions (item 13); (2) the staff made every attempt to answer their questions (item 22); and (3) they were provided the opportunity to work together as a professional group (item 23). The RCA staff was extremely pleased with this total agreement on these items since freedom of expression and individualism within the setting of a group working together for a common purpose are educational tenets which are valued by the staff and deemed necessary for maximum effectiveness. Individualization was also indicated as having been successfully provided by allowing practice and application in each participant's area of interest (item 3, 80%), modes of presenting information (item 4, 90%), and individual assistance (item 16, 75%).

Items 2, 5, 6, 20, and 21 were concerned with the planning, sequencing, and adequacy of the workshop materials and activities. Eighty percent of the participants found: (1) the activities well-planned and logically sequenced for learning, (2) the terminology used by the staff at an appropriate level; (3) the handout materials adequate, and (4) that more information should have been presented early in the workshop about learning modules and their use in the classroom. Seventy percent expressed the desire to have had more "participant centered" activities, such as deriving competencies, objectives, and learning activities.

Although sixty percent of the participants felt that adequate time was allowed to understand the principles and concepts presented (item 19), there was some indication that the participants felt "rushed" during the workshop. This is again indicated by items 7 and 11 where 50% felt they needed more time for each activity and 40% felt the need for more time to derive performance objectives.

Two aspects of the workshop appear to be less than satisfactory. The first is the amount of time provided for the workshop and the second is the need for additional information to be provided about learning modules and their use in the classroom. However, when considering the amount of material coverd by the participants and the tasks which will confront them in the future, the time for additional experiences in these areas will of course be afforded--such time not being available in a workshop conducted for initial familiarization to a curriculum system.

Recommendations for the Future:

The third aspect of the questionnaire was concerned with recommendations for future activities. Three items were included to cover this area as well as responses to the essay item. A graph of the responses is presented below.

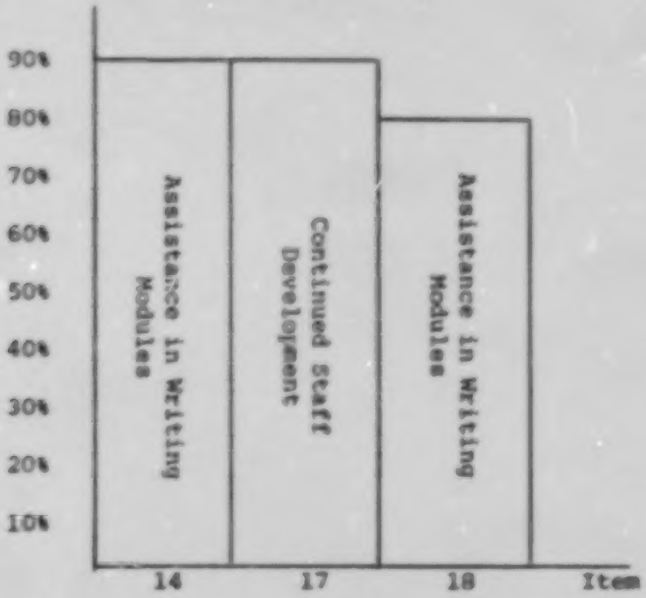

Figure 4. Recommendations for the Future

Ninety percent of the participants expressed the need for additional assistance in developing their curriculum--both prior to the opening of the Center and during its operation (items 14 and 17). Only twenty percent of the participants felt that they could continue to develop curriculum materials and carry their teaching loads without additional support staff (item 18). In addition to these indications of the need for further assistance, the participants listed several areas where they had concern in response to item 25. These areas of concern are listed below with the number of participants expressing concern indicated in the left margin.

6 • Need another workshop(s)

7 • Improvements could be made in content and methods

4 • Improvements could be made in Workshop Management

4 • Need more information on the Center

4 • More emphasis on learning modules, or packages

1 • Need advisory council soon

Conclusions

The two-week conference was one in which many activities were conducted in order to teach the basic techniques of developing competency-based curricular materials. The conference participants were quite perceptive and worked hard throughout the two-week conference.

The RCA consulting staff feels the participants are making rapid progress in attaining the necessary skills in developing curricular materials to be used in the Career Development Center. This is evidenced in the materials that were developed by each participant during the conference.

It is recommended that a clearly defined program be established in the near future for the two clusters. Since the Workshop for Careers in the Arts have located other facilities, there now exists space for expansion of both the two pilot clusters.

It is also recommended that staff development be continued during the summer to develop a large percentage of the needed instructional materials prior to the opening of the Center in September, 1974. If a well-defined program is not begun in the Center the instructional staff will be left with the task of simply transferring their individual programs from their present schools to the Center. The consulting staff feels this would not achieve the degree of success that is anticipated by the D.C. public schools.

From the self-assessment conducted at the conclusion of the Phase II staff development, the participants indicated that:

- they had increased confidence and skill for developing curricular materials in their content areas for classroom use, but that they still need more information on learning modules and their classroom uses.

- they need additional assistance to develop their curriculum, both prior to and following the opening of the Center.

- any future workshops should allow more time for the learning experiences, and that more of them should be participant-centered.

APPENDIX A

CONFERENCE SCHEDULES

CONFERENCE SCHEDULE

STAFF DEVELOPMENT PLAN FOR CAREER EDUCATION

WASHINGTON, D. C.

Monday, February 25

Introduction of Conference Personnel

Washington D.C. Staff

RCA Education Services Staff

Dr. T. C. Smith, Jr.
Dr. Robert D. Cain
Dr. Charlotte O. Smith
Mr. Ed Devaney
Mr. Richard Butler

Introduction to Curriculum Process

Review of Phase I Staff Development
Management Plan for Program Development
A Model for Developing Instructional Materials
Individualized, Continuous-Progress Learning Systems
Competency-Based Learning Materials

Tuesday, February 26

Deriving Learning Competencies

Behavioral Analysis
- How to Use Task Analysis to Derive Competencies
- How to Identify Competencies

Wednesday and Thursday, February 27-28

Derive Competency Statements for Pilot Programs

Thursday and Friday, February 28-March 1

Writing Performance Objectives

- Performance Objectives Defined
- Components of Performance Objectives
- Writing an Acceptable Objective
- Classifying Written Objectives

CONFERENCE SCHEDULE

STAFF DEVELOPMENT PLAN FOR CAREER EDUCATION

WASHINGTON, D. C.

Monday, March 25, 1974

I. Introduction of Conference Personnel
   - Washington D. C. Staff

   - RCA Education Services Staff

     - Dr. Bob Cain
     - Dr. Charlotte Smith
     - Dr. T. C. Smith, Jr.
     - Mr. Ed DeVaney

II. Summary of First Week's Activities

   A. Deriving Learning Competencies
      1. Behavioral Analysis
      2. Using Task Analysis to Derive Competency Statements

   B. Writing Performance Objectives
      1. Pre-Assessment Package on Performance Objectives

Monday and Tuesday, March 25-26, 1974

III. Writing Performance Objectives

   A. Performance Objectives Defined
   B. Components of Performance Objectives
   C. Writing Acceptable Performance Objectives
   D. Classifying Performance Objectives
   E. Establishing guidelines for developing performance objectives

Wednesday, Thursday, Friday, March 27-29, 1974

IV. Writing Learning Modules

   A. Introduction to learning modules
   B. Develop a format for learning modules
   C. Develop at least one example of a learning module in area of expertise

APPENDIX B

(1) THREE STAFF EXERCISES ON CAREER DEVELOPMENT CENTER PHILOSOPHY, GOALS, AND PROGRAM OUTLINES

(2) MODIFIED RECOMMENDATIONS: PHILOSOPHY, GOALS, AND PROGRAM OUTLINES

(3) ORIGINAL RECOMMENDATIONS: PHILOSOPHY, GOALS, AND PROGRAM OUTLINES (HANDOUT #1)

THREE STAFF EXERCISES ON:

CAREER DEVELOPMENT CENTER PHILOSOPHY; GOALS; AND PROGRAM OUTLINES

Exercise #1

Directions for Handout 1

1. Read your Career Development Center Philosophy statement found in your handout "Recommendations: Career Development Center Philosophy, Goals of the Career Development Center, and Programs for Each Pilot Career Cluster."

2. After you have read the philosophy statement, discuss it with your group and make any written comments on the handout or on this exercise sheet.

3. When you complete this exercise, hand it in to the workshop team leader.

Comments:

Exercise #2

Directions for Handout 1

1. Review the Goal Statements for the Career Development Center found in your handout 1. These goal statements were developed during the first two week workshop; however, study each one very carefully and discuss them with your group.
2. If you feel there should be revisions, additions, or deletions made, then write your comments on this exercise sheet.
3. When you complete this exercise, please hand it in to your workshop leaders.

Comments:

Exercise #3

Directions for Handout 1

1. In your handout, you will find a description of the programs in the two pilot clusters for the Career Development Center. Find the programs that you helped develop during the first two week workshop and review them for completeness.
2. Review the outlines and discuss them with other members of your group.
3. If you find errors, please make your corrections on the program outline or on this exercise sheet.
4. When you finish, hand in this exercise to your team leader.

Comments:

MODIFIED RECOMMENDATIONS

CAREER DEVELOPMENT CENTER PHILOSOPHY

GOALS OF THE CAREER DEVELOPMENT CENTER

PROGRAMS FOR EACH PILOT CAREER CLUSTER

Washington D.C. Public Schools

Career Development Center Philosophy

The purpose of the Career Development Center is to develop high school and post-secondary students professionally, socially, and culturally for careers in Communications & Media and Fine Arts & Humanities. *The Center will provide educational experiences that prepare students for either immediate employment or further education.* All students in the Career Center will be treated as *artists and* artisans in their chosen fields and will be referred to by their professional titles. For example, a student enrolled in visual arts will be called an artist and a student enrolled in drafting will be referred to as a draftsman.

Within the center, the artisan's development will depend heavily upon the instructor's personal attention and instruction. The Center will create an atmosphere in which the artist's creativity can flourish and in which he can remain in touch with himself and his culture. Therefore, *portions of* the curricular *activities* may be student initiated. The instructors as well as the students are strongly encouraged to produce or to work in their career areas, enhancing ties with the professional world as well as the surrounding community.

The result of professional work is a product or a service. In order to best acquaint the students with the realities of the work situation and to provide a meaningful motivational force, the students in each program in the Center will produce services and/or products that are useful in the community.

The Center will provide for the student to work in a professional-like setting, having maximum alternatives and career choices. As an *artist or* artisan he will be encouraged to broaden his cultural awareness through familiarity with all aspects of his chosen profession and through experience in different but related fields. At the same time he will be functioning in an atmosphere that enhances *his* positive self-concept as a productive and creative member of society.

Career Development Center Goals

The Career Development Center in its expressed philosophy is to provide the student with a realistic learning environment in which there is a choice of programs to be pursued. In order to provide a viable and relevant program for each cluster, the needs of the work and the educational communities, the arts, the students, and the school district have all been considered in establishing tentative goals for the Career Development Center. The goals all result in one single purpose. This purpose is to provide programs that will *start* the student well on his way toward a successful career.

The program goals are designed specifically to:

1, 2. Provide the student with *the opportunity to develop* skills that can mean immediate employment *and/or continued education.*

3. Provide a *humanistic* atmosphere for learning in which the students' *individuality* and *creativity* can flourish, *thus enabling* them to remain in touch with themselves and their culture.

4. Provide the student with *cooperative educational experiences between the Center and the world of work, producing products and services useful to the community.*

5. Provide the student with the opportunity to explore various career options within each cluster and *the responsibility* to make a tentative choice.

6. Provide a learning environment in which both the instructor and the student have the opportunity to develop attitudes that will ensure *the* success *of* the center, *and which results in the student choosing a satisfying career.*

7. Provide the student with an individualized, flexible curriculum designed to excite the student's curiosity and appetite for learning, broaden his horizons, foster his personal growth, and challenge his best efforts.

Summary of Comments and Recommendations

on Pilot Cluster Program Outlines

General Comment: Will Literary Arts Program plans be expanded or dropped? What are the effects of relocating "Workshop for Careers in the Arts"? On the Fine Arts & Humanities Cluster?

COMMUNICATIONS & MASS MEDIA

I. Photography--the entire program needs to be reviewed by Lew Berry, Literary Arts Program, and Warren Brooks, Chamberlain.

  B. Advanced Photography

    2. Photographic Specialization
    Add:
      f. Product
      g. Medical
      h. Industrial

V. Art Advertising--Commercial

  Major revising as follows:

  A. Introduction to: Advertising Art, Mass Media, and Communications

    1. Advertising Art
      a. Materials of the Advertising Artist
      b. Use and Care of Materials
      c. Studio Procedures

    2. Mass Media

    3. Communications

  B. Commercial Art

    1. General

      a. Lettering Type and Composition
      b. Layout
      c. Color and Tone
      d. Posters
      e. Direct Mail Advertising
      f. Special Design
      g. Magazine Art
      h. Newspaper Advertising
      i. Merchandise Illustration
      j. Fashion and Figure Drawing

2. Specialized

    a. Display Techniques
    b. Cartooning

C. Coop Program - Camera, Press, and Photography

    1. Reprographic Techniques
    2. Photographic Application

VI. Creative Writing

Comment: Place in Fine Arts & Humanities Cluster.

A. Delete: Introduction to

VII. Journalism

A, B, C. Program outlines are not in proper sequence.

C. In addition, TV News should be revised due to additional space and expanded goals.

FINE ARTS & HUMANITIES CLUSTER

I. Literary Arts

C. Graphic Design: needs elaboration by Reggie McGee, Literary Arts Program

II. Theatrical Arts

Delete?

III. Visual Arts

Delete?

IV. Music

Delete?

ORIGINAL RECOMMENDATIONS
CAREER DEVELOPMENT CENTER PHILOSOPHY
GOALS OF THE CAREER DEVELOPMENT CENTER
PROGRAMS FOR EACH PILOT CAREER CLUSTER

Pilot Cluster Programs

The programs to be offered in the Communications & Media Cluster and the Fine Arts & Humanities Cluster have tentatively been identified. During the two-week staff development conference (previously mentioned), it was impossible to survey all the relevant information available for review and possible inclusion in the two pilot clusters. However, in light of the various activities the following program outlines have been tentatively established in each cluster. The consulting team from RCA feels that two major areas need to be explored in greater depth. These two areas are as follows:

1. A more firmly agreed plan must be established for the TV production program. At present it is not fully understood whether or not the existing fourth floor facilities will be available for student training (Audio-Visual Center). If this facility is not to be for student use, then other arrangements must be made.
2. In the Fine Arts & Humanities Cluster, the programs that are outlined in this report are not representative of the Humanities; however, the Fine Arts are represented in all relevant areas except music. During the continuation of the staff development program and the planning for the center, this area will need more attention; that is, will music be included in the center or will it be offered at another location?

The following programs have tentatively been established for the two pilot clusters.

Communications & Media Cluster

This cluster brings together several fragmented programs that have existed in isolation from each other within the D.C. schools. These programs, at present, are not uniform in instructional content nor in the type of equipment and facilities available. During the development of the programs for this cluster, a great deal of time was spent on determining how these various programs could be brought together into a single cluster in which both common goals and performance objectives could be developed. Once established this would furnish a common basis for working to provide maximum utilization of personnel, equipment, instructional materials, and other resources located in the Fine Arts & Humanities Cluster as well as other resources in the center, such as the audio-visual center.

The cluster programs presented here outline the content that is proposed for each program. The next logical step within each program is to task analyze each program area and state the content in terms of desired student competencies. This, then, logically leads to stating the program content in terms of behavioral or performance objectives.

Cluster Programs

I. Photography

  A. General Photography
  B. Advanced Photography

Program Outlines

A. General Photography

  1. Basic Photography

    a. Overview of profession
    b. History of photography
    c. Hand-held cameras
    d. Optics
    e. View cameras
    f. Films

    g. Film holders
    h. Types of photography
    i. Lighting
    j. Chemistry
    k. Safety
    l. Color theory
    m. Exposure meters
    n. Filters
    o. f/ stops
    p. Shutter speeds

2. Darkroom Procedures

    a. Black and white film

        (1) Safety
        (2) Chemicals
        (3) Equipment (tanks, reels, safety-lights, temperature control sinks)
        (4) Darkroom techniques
        (5) Negative care
        (6) Negative cleaning
        (7) Papers (surfaces, weights,developers, contact projections)
        (8) Toning

    b. Color film

        (1) Processing

            (a) Films - Ektachrome E2, E3, E4
            (b) Prints - Ektacolor
            (c) Positive/negative

    c. Laboratory procedures

        (1) Washing
        (2) Finishing
        (3) Print mounting

3. Corrective Photography

    a. View camera (swings and tilts)
    b. Composition
    c. Large format cameras
    d. Lighting (tungsten, QI, bounce)
    e. Subjects (opaque, translucent, shiny metallic)
    f. Small object photography (copying, macro, micro, B & W, color, studio, location, lighting ratio)

4. Portrait
    a. Head and shoulders
    b. Half figure
    c. Full figure
    d. Lighting
    e. Expression
    f. Studio techniques
    g. Posing
    h. B & W
    i. Color
    j. Location
    k. Studio
    l. Formal
    m. Informal

5. Illustration
    a. Lighting
    b. Composition
    c. Posing
    d. Studio
    e. Location
    f. Backgrounds
    g. B & W
    h. Color
    i. With models
    j. Model release

B. Advanced Photography

1. Photojournalism
    a. Equipment
    b. 35 mm cameras
    c. 2-1/4 cameras
    d. Films
    e. Flash
    f. Locations (news, set-up shots, sports)
    g. Captions
    h. B & W
    i. Color
    j. Publicity
    k. Picture stories
    l. Photo essays
    m. Shoot-to-layout

2. Photographic Specialization (Student will specialize in one or more of the following areas)

        - a. Photojournalism
        - b. Corrective photography
        - c. Darkroom procedures
        - d. Portrait
        - e. Illustration

II. Drafting

- A. Introduction to Drafting
- B. General Drafting
- C. Architectural Drafting

Program Outlines

A. Introduction to Drafting

- 1. History and philosophy
- 2. Care and preservation of equipment
- 3. Use of equipment
- 4. Drafting procedures

    - a. Use of instruments
    - b. Layout sheets
    - c. Centering drawings
    - d. Alphabets of lines
    - e. Use of pencils and leads
    - f. Lettering
    - g. Dimensioning
    - h. Using the scale
    - i. Drawing circles and arcs

- 5. Geometrical construction

    - a. Sketching

- 6. Blueprint reading (working drawings)

    - a. Lines
    - b. Symbols
    - c. Abbreviations

- 7. Duplications

    - a. Blueprints

B. General Drafting

1. Orthographic projections

    a. 2-view drawings
    b. 3-view drawings

2. Section drawing

    a. Full section
    b. Half section
    c. Offset sections
    d. Broken-out sections
    e. Revolved sections
    f. Removed sections
    g. Auxiliary sections
    h. Alternate sectioning
    i. Phantom sections

3. Pictorial drawings

    a. Oblique
    b. Isometric
    c. Perspective

4. Technical illustrations

5. Auxiliary drawings

6. Revolutions

7. Specifications

C. Architectural Drafting

1. Architectural history
2. Lettering for architectural drawings
3. Architectural styles
4. Types of building designs
5. Architectural scales
6. Building codes
7. Reading plans (symbols)
8. General "classes" of architectural drafting

    a. Preliminary sketches
    b. Display and competitive drawings
    c. Model construction
    d. Working drawings (plans)
    e. Detail drawings

9. Basic design for architectural drafting
10. Materials (construction)
11. Specifications

III. Graphic Arts (Printing)

- A. Composition
- B. Litho Camera
- C. Presses
- D. Finishing

Program Outlines

A. Composition

- 1. Introduction and history
    - a. Layout and design
    - b. Markup
    - c. Printer's English (rewrite)
    - d. Proofreading
    - e. Printer's math
- 2. Hot metal composition
    - a. Machine operations and maintenance
        - (1) Linotype
        - (2) Intertype
        - (3) Ludlow
        - (4) Elrod
        - (5) Saw
    - b. Lock-up-stone
    - c. Proofreading
    - d. Reproduction
- 3. Cold composition
    - a. Keyboard skills
    - b. Machine operations
        - (1) Varitype
        - (2) Typewriter
        - (3) Headliner
        - (4) Photo setter
        - (5) Lino film
        - (6) Typositor
    - c. Copy preparation
    - d. Paste-up

B. Litho Camera

1. Camera area
    a. Basic cameras
        (1) Types
        (2) Parts
        (3) Operations
    b. Darkroom
        (1) Film
        (2) Chemicals
        (3) Processing
    c. Production
        (1) Line photography (B & W)
        (2) Halftone photography
        (3) Color separation (filters)
        (4) Positives
        (5) Film duplicating
        (6) Photo paper prints
        (7) Making test shots (setting standards)
2. Stripping area
    a. Flats
        (1) Kinds
        (2) Sizes
        (3) Measurements and layouts
    b. Stripping
        (1) Taping negatives
        (2) Cutting windows
    c. Negative correcting
        (1) Opaque
        (2) Film scribing
    d. Stripping techniques
        (1) Multi-page imposition
        (2) Surprinting
        (3) Stripping (step and repeat)
        (4) Multicolor
3. Platemaking

a. Kinds of plates
b. Operations

    (1) Flat handling
    (2) Exposing (burning)
    (3) Processing

c. Production

    (1) Blueline (proof)
    (2) Surprinting (double burn)
    (3) Stepping (step and repeat)
    (4) Color key (color proofs)
    (5) Test exposure

C. Presses

1. Letter Presses
2. Offset Presses

D. Finishing (binding)

1. Folding
2. Stapling
3. Stitching
4. Padding
5. Plastic fastening
6. Cutting and trimming
7. Collating
8. Wrapping
9. Drilling

IV. Broadcasting, Radio (Audio Communications)

A. Radio Broadcasting
B. Documentary Production

Program Outlines

A. Radio Broadcasting

1. Production techniques
2. FCC/third-class license
3. Announcing techniques
4. Broadcast journalism
5. Sales operations
6. Management
7. Broadcast media and role in society

B. Documentary Production

V. Art, Advertising--Commercial

A. Commercial Art

Program Outline

A. Commercial Art

1. Art media
2. Photographic application
3. Reprographic techniques
4. Elements and principles of design
5. Theories of communication, advertising and mass media
6. Studio procedures
7. Advertising design and layout
8. Graphic design
9. Life drawings
10. Cartooning
11. Illustrations
12. Lyrical illustration
13. Lettering and typography
14. Fashion drawing
15. Display techniques

VI. Creative Writing

A. Introduction to Creative Writing

Program Outline

A. Introduction to Creative Writing

1. Poetry
2. Novel
3. Short story
4. Essays
5. Playwriting

VII. Journalism

A. Reporting
B. Photojournalism
C. TV News

Program Outlines

A. Reporting

*1. Interviewing
*2. Research, survey

*3. Communications law
4. Writing techniques
5. Feature writing
6. Editing
*7. Magazine layout and design
8. Typography

B. Photojournalism

*1 Interviewing
*2 Research, survey
*3 Communications law
4. Hand-held cameras
   (2 1/4, 35mm, 4x5)
5. Lenses
6. Films
7. Press photography
   a. Locations
   b. Set-up shots
8. Use of flash
9. Action photography
10. Printing techniques
11. Captions
*12. Layout and design (magazine)
13. Photo essays
14. Publicity

C. TV News

*1. Interviewing
*2. Research, survey
*3. Communications law
4. Story organization
5. VTR-shooting and recording
6. VTR-editing techniques
7. Overdubbing narration
8. News conference
9. News feature story
10. Basic filmmaking techniques
11. VTR projects
12. Super 8mm film projects
13. Assembling and organizing news show

* Joint and/or common topics

FINE ARTS & HUMANITIES CLUSTER

This cluster is structured to bring together, in the center, programs that now exist in the area schools as well as programs that are offered outside the public school system. This is especially true for "Workshops For Careers In the Arts." The workshop programs in the arts have been previously conducted with funds from private sources utilizing public secured facilities. This has provided the workshop with extremely close ties with institutions and agencies in the community where students have the opportunity to experience cooperative education.

The career center will afford the opportunity for this program and other related programs now offered in area schools to share common resources within the cluster, and further provide a setting in which many learning experiences can be obtained in the Communications & Media Cluster.

Both the exact correlation and common learning experience will be determined when the program outlines are stated in terms of learner outcomes. When this has been accomplished in curriculum development, then duplication of learning experiences can be eliminated, and a student will be taught by a team of instructors who may be located in various programs throughout both clusters.

The program outlines presented here and developed during the two-week conference are not complete. There was not a full representation of instructors present throughout the conference period. As stated previously, the cluster focuses primarily upon the Fine Arts as opposed to the Humanities. Additionally, the proposed program in music is not complete; in fact, it is not fully understood at this time whether or not space will be available in the center for an expanded program in music.

The following outlines provide the proposed programs to be offered in the cluster.

Cluster Programs

I. Literary Arts

- A. Fiction
- B. Poetry
- C. Graphic Design
- D. Filmmaking
- E. Photography

Program Outlines

A. Fiction

1. Short story writing
2. Playwriting
3. Film scripts
4. Novel

B. Poetry

1. Writing forms
2. Words
3. Haiku
4. Reading
5. Movement and oral interpretation
6. Movement/oral/music

C. Graphic Design

1. Layout and design
2. Printmaking
3. Etching
4. Silkscreens
5. Batik

D. Filmmaking

1. Overview of filmmaking
2. Projects - Super 8
   a. Idea and treatment
   b. Storyboard
   c. Script
   d. Camera
   e. Lighting
   f. Editing
   g. Sound
   h. Titling
3. Group projects - 16mm
   a. Idea and treatment
   b. Storyboard
   c. Script
   d. Camera
   e. Lighting
   f. Editing
   g. Sound
   h. Titling
4. Videotape
   a. Technology
   b. Basic techniques
   c. Projects
5. Animation and titling

E. Photography

1. Basics of camera and laboratory
2. Shooting
3. Lighting
4. Composition
5. Laboratory procedures
6. Equipment and processing
7. Printing
   a. Proofs
   b. Projection
8. Print finishing
9. Print mounting
10. Print quality

II. Theatrical Arts

A. Dance
B. Drama
C. Theater organization

Program Outlines

A. Dance

1. Ballet
    a. Technique
    b. Points
    c. Men's class
    d. Repertory
    e. Adagio
    f. Character
    g. Performing experience
2. Modern
    a. Technique
    b. Repertory
    c. Improvisation
    d. Performing experience
3. Jazz
    a. Technique
    b. Performing experience
4. Theory
    a. Background and history of dance
    b. Composition
    c. Choreography
    d. Anatomy and kinesiology
    e. Notation
5. Technical theatre (dance related)
    a. Costume
    b. Lighting
    c. Theatre organization
    d. Dance theatre management
    e. Production seminar

B. Drama

1. Acting
2. Speech
3. Improvisation
4. Reading practice
5. Dramatic literature
6. Dance for actors
7. Music for actors

C. Theater Organization

1. Theory
    a. History
    b. Music theory and practice for actors
    c. Dramatic literature
    d. Technical theater history

2. Practical
    a. Movement
    b. Acting
    c. Speech and action
    d. Performance
    e. Oral interpretation
    f. Directing
3. Technical
    a. Lighting design and practice
    b. Costume design and construction
    c. Set design and construction
    d. Theater organization and management
    e. Production seminar

III. Visual Arts

A. Painting
B. Sculpture
C. Filmmaking
D. Metalcraft and Jewelry
E. Costume Design
F. Makeup
G. Lighting
H. Fashion Design

IV. Music

A. Artistic Performance
B. Vocal
C. Music Theory
D. Sound Systems - Applied
E. Music Therapy
F. Music Industry
G. Other

Program Outlines

A. Artistic Performance

1. Orchestral instruments
2. Keyboard instruments

B. Vocal

1. Solo
2. Group

C. Music Theory

1. Arranging
2. Orchestration
3. Composition
4. Improvisation
5. Conducting

D. Sound Systems - Applied

1. Recording
2. Printing

E. Music Therapy

F. Music Industry

1. Repair
2. Tuning
3. Salesmanship

G. Other

1. Music Librarian
2. Critical Review
3. Arts Management

APPENDIX C

(1) FIVE STAFF EXERCISES ON HANDOUT 2

(2) HANDOUT 2--BEHAVIORAL ANALYSIS LEADING TO COMPETENCY STATEMENTS

Exercise #1

Directions for Handout 2

1. Read "Behavioral Analysis Leading to Competency Statements" pages 1-3. Your workshop leaders will then review with you the steps of behavioral analysis and the criteria for selecting jobs.

2. Following the directions on the bottom of page 3 for the handout; select the job families and representative jobs for your program.

3. List the career ladder for at least one job family.

4. When you have finished selecting jobs and listing the career ladder(s), please turn these in to the workshop leaders.

Career Ladder for Job Family:______________________________

BEST COPY AVAILABLE

BEST COPY AVAILABLE

Job Families for ______________________ Program

Representative Jobs

BEST COPY AVAILABLE

Exercise #2

Directions for Handout 2

1. Read pages 4-13 in Handout 2. These pages contain basic definitions for the analysis. Feel free to discuss the definitions with members of your group.
2. Your workshop leaders will meet with you to assist in examining each part of sentence analysis and seeing how the definitions fit into the analysis.
3. Using the examples of sentence analysis found on pages 14-16, write one or two summary sentences for one of the selected jobs. Have the members of your group critique your sentences.
4. When you are satisfied with your sentences, please turn them in to your workshop leaders.

Sentence Summaries for Job:____

Exercise #3

Directions for Handout 2

1. After you have completed the sentence analysis exercise, your workshop leaders will distribute forms for writing job descriptions and will assist you in writing the descriptions.
2. When you have completed the job descriptions, please turn them in to your workshop leaders. Make sure your name is on all forms.

Exercise #4

Directions for Handout 2

1. Read pages 17-21 of Handout 2. Your workshop leaders will then return your job descriptions.
2. Compare the tasks listed on pages 18-20 with your job descriptions. Then working with the members of your group, write the tasks for each job description.
3. When you have finished check with one of the workshop leaders.

Exercise #5

Directions for Handout 2

1. Review your job descriptions and lists of tasks.
2. Review page 21 of Handout 2.
3. Your workshop leader will assist your group in starting your task analysis and establishing of competencies.
4. When you have established the competencies for your program, please turn them in to the workshop leaders.

BEHAVIORAL ANALYSIS
LEADING TO
COMPETENCY STATEMENTS

Career preparation is essentially concerned with the acquisition of skills and knowledge in a chosen cluster of occupations in preparation for securing a job or preparing for continuing education. Basically, in terms of the student, Career Preparation is education to become proficient in occupational entry-level skills, knowledge, and attitudes so that the acquired skills may be applied, either by entering into employment or by continuing education throughout an individual's lifetime.

Regardless of the cluster of occupations, the goals of a career preparation program are to insure that the student is capable of (1) performing satisfactorily on the job and (2) improving his performance through further experiences. To achieve either of these goals curriculum developers must know what tasks the student's future career will require, what the student needs to do to perform each of the tasks, and what will be the most frequently performed tasks.

Behavioral analysis is a technique for providing curriculum developers with this occupational information so that they can determine what kinds of performances must be included in the curriculum. Behavioral analysis first involves job analysis and then task analysis. Job information is the basic data used to isolate these tasks and performances. The techniques for obtaining and presenting this job information are called "job analysis procedures." These procedures include the development of job or task descriptions. Then the job or task descriptions are analyzed to determine the behavioral characteristics of the job requirements. This behavioral analysis is needed to determine the knowledge and performance content of the job. The major steps of behavioral analysis are listed below:

1. Select job families for an occupational cluster.

2. Select sets of jobs most representative of the job families.

3. Prepare job descriptions.

4. Prepare task descriptions.

5. Conduct a task analysis.

6. Determine competency statements.

There are five major sources that can be used to identify and to select the job families to be considered.

1. Research data such as Dictionary of Occupational Titles, and Occupational Outlook Handbook

2. Content specialist or master instructors

3. Exemplary programs

4. Cluster advisory committees

5. Student interest

The Dictionary of Occupational Titles (DOT) and the Occupational Outlook Handbook probably represent the most highly organized and detailed information available today concerning job families and the specific jobs within a family. These sources describe a tremendous range of jobs; however, the jobs selected should differ from one another in the kind and level of performance they require and, taken as a group, should include substantially all of the skills and knowledge that are demanded by the job family.

The following criteria and general considerations should be used in determining the jobs selected:

1. In comparison with related jobs, the selected jobs require performance of a wide variety of tasks and a broad range of skill levels.

2. The jobs selected should require an appropriate amount of educational instruction time. That is, jobs requiring a rather short period of instruc-

tion or an extended length of instruction may be considered but should not be included for extensive task analysis.

3. The jobs selected should have entrance, apprenticeship, or on-the-job training requirements which can be met better as a result of career preparation. Thus students who perform successfully during the career preparation stage can experience meaningful and lasting career rewards in a relatively short period of time after completing the program.

4. The jobs selected should be appropriate with respect to the cost, size, support requirements, and facilities available for instructional use.

5. The jobs selected should be predictable with respect to the skills and knowledge which will be required in the next 5 to 10 years.

6. The selected jobs should have favorable employment expectations.

7. The selected jobs should not be a "dead-end." Every job, starting with the lowest level, should be a prerequisite for and lead directly to a higher level job(s). Thus, the opportunity to continue from the semi-skilled level to the ranks of the professions is fostered.

On the following pages lists of job titles are arranged in areas of work. Each listing of jobs is preceded with the worker trait groups of the area. (This information--areas of work, worker trait groups, and job titles--was compiled from the Dictionary of Occupational Titles, Volume II.) Locate the areas of work which relate to your program. Then, review the job titles listed. Add other jobs which you feel are relevant. Delete (by marking through) the jobs that obviously do not apply. Then select the job families which should be considered in your program. Be sure and consider the seven criteria for job selection.

For criteria 7, the listing of the job chain, or career ladder, from lowest level to highest level should be developed for the jobs selected.

ENTERTAINMENT

CREATIVE ENTERTAINMENT WORK

15 ENTERTAINMENT AND RECREATION
150. Dramatics
150.048 STORY TELLER (profess. & kin.)
159. Entertainment and Recreation, n.e.c.
159.048 CLOWN (amuse. & rec.)
COMEDIAN (amuse. & rec.)
HYPNOTIST (amuse. & rec.)
IMPERSONATOR (amuse. & rec.)
MIMIC (amuse. & rec.)
MAGICIAN (amuse. & rec.)
PRESTIDIGITATOR (amuse. & rec.)
MIME (amuse. & rec.)
MINSTREL (amuse. & rec.)
PUPPETEER (amuse. & rec.)
SONG AND DANCE MAN (amuse. & rec.)
VENTRILOQUIST (amuse. & rec.)

MUSICAL WORK, INSTRUMENTAL

15 ENTERTAINMENT AND RECREATION
152. Music
152.048 DIRECTOR, MUSIC (motion pic.; radio & tv broad.)
DIRECTOR, MUSIC, INTERNATIONAL BROADCAST (radio & tv broad.)
MUSICAL ENTERTAINER (amuse. & rec.)
MUSICIAN, INSTRUMENTAL (amuse. & rec.)
ORCHESTRA LEADER (profess. & kin.)

MUSICAL WORK, VOCAL

15 ENTERTAINMENT AND RECREATION
152. Music
152.048 CHOIRMASTER (profess. & kin.)
CONCERT SINGER (amuse. & rec.)
DIRECTOR, CHORAL (amuse. & rec.)
POPULAR SINGER (amuse. & rec.)

MUSIC

MUSICAL WORK, CREATIVE

15 ENTERTAINMENT AND RECREATION
152. Music
152.088 ARRANGER (profess. & kin.)
COMPOSER (profess. & kin.)
ORCHESTRATOR (profess. & kin.)

DRAMATICS

15 ENTERTAINMENT AND RECREATION
150. Dramatics
150.048 ACTOR (amuse. & rec.)
DRAMATIC READER (amuse. & rec.)

RHYTHMICS

15 ENTERTAINMENT AND RECREATION
151. Dancing
151.048 DANCER (amuse. & rec.)

RADIO ANNOUNCING & RELATED WORKS

15 ENTERTAINMENT AND RECREATION
150. Dramatics
150.148 MOTION PICTURE NARRATOR (motion pic.)
159. Entertainment and Recreation, n.e.c.
159.148 ANNOUNCER (amuse. & rec.)
ANNOUNCER (radio & tv broad.)
ANNOUNCER, INTERNATIONAL BROADCAST (radio & tv broad.)
DISK JOCKEY (radio & tv broad.)
SPORTS ANNOUNCER (radio & tv broad.)
MASTER OF CEREMONIES (amuse. & rec.)
WRITER-ANNOUNCER, BILINGUAL, INTERNATIONAL BROADCAST (radio & tv broad.)

PHOTOGRAPHY & COMMUNICATION

MOTION PICTURE PROJECTING, PHOTOGRAPHIC MACHINE WORK, AND RELATED ACTIVITIES

14 ART WORK
143. Photography
143.282 PHOTOGRAPHER, SCIENTIFIC (profess. & kin.)
143.382 BIOLOGICAL PHOTOGRAPHER (profess. & kin.)
CAMERMAN, ANIMATION (motion pic.)
CAMERMAN, SPECIAL EFFECTS (motion pic.)
CAMERAMAN, TITLE (motion pic.)
PHOTOGRAPHER, AERIAL (profess. & kin.)
PHOTOGRAPHER, FINISH (amuse. & rec.)
PHOTOGRAPHER, IDENTIFICATION BUREAU (gov. ser.)
96 AMUSEMENT, RECREATION, AND MOTION PICTURE WORK, N.E.C.
960. Motion Picture Projecting
960.382 MOTION-PICTURE PROJECTIONIST (amuse. & rec.; motion pic.)
963. Radio and Television Production, n.e.c.
963.382 TELEPROMPTER OPERATOR (radio & tv broad.)
VIDEO-RECORDING ENGINEER (radio & tv broad.)
97 GRAPHIC ART WORK
971. Photoengraving
971.382 PHOTOGRAPHER, PHOTOENGRAVING (print. & pub.)
STEP-AND-REPEAT MAN (print. & pub.)
972. Lithography and Related Work
972.382 PHOTOGRAPHER, LITHOGRAPHIC (print. & pub.)
PHOTOLITHOGRAPHER APPRENTICE (print. & pub.)
XEROGRAPHY-MACHINE OPERATOR (print. & pub.)
979. Graphic Art Work, n.e.c.
979.382 PHOTOSTAT OPERATOR (any ind.)

TRANSLATING, EDITING, & RELATED WORKS

10 MUSEUM, LIBRARY, AND ARCHIVAL SCIENCES
100. Library Work
100.288 Bibliographer (profess. & kin.)
109. Museum, Library, and Archival Sciences, n.e.c.
109.288 Research Assistant (profess. & kin.) II
Research Worker, Encyclopedia (profess. & kin.)
13 WRITING
132. Writing and Editing, Publications
132.288 Book Critic (print. & pub.) II
Copy Reader (print. & pub.)
  Copy Reader, Book (print. & pub.)
Editing Clerk (clerical)
Editorial Assistant (print. & pub.)
Editor, News Photograph (print. & pub.)
Editor, Picture (print. & pub.)
132.288 Editor, Telegraph (print. & pub.)
Reader, First (print. & pub.) I
15 ENTERTAINMENT AND RECREATION
152. Music
152.288 Copyist (any ind.)
96 AMUSEMENT, RECREATION, AND MOTION PICTURE WORK, N.E.C.
962. Motion Picture Production, n.e.c.
962.288 Editor, Film (motion pic.)
963. Radio and Television Production, n.e.c.
963.288 Copyright Expert (radio & tv broad.)
Script Reader (radio & tv broad.)

NEWS REPORTING & RELATED WORKS

13 WRITING
132. Writing and Editing, Publications
132.268 Reporter (print. & pub.)
  Correspondent (print. & pub.; radio & tv broad.)
  Feature Reporter (print. & pub.)
Rewrite Man (print. & pub.) II

CREATIVE WRITING

13 WRITING
130. Freelance Writing
130.088 Essayist (profess. & kin.)
Literary Writer (profess. & kin.)
Poet (profess. & kin.)
  Lyric Writer (profess. & kin.)
131. Writing and Editing, Motion Pictures, Radio, and Television
131.088 Continuity Writer (motion pic.)
Continuity Writer (radio & tv broad.)
Gag Writer (motion pic.; radio & tv broad.)
131.088 Playwright (profess. & kin.)
Con. Reader (motion pic.)
Scenario Writer (motion pic.)
Script Writer (radio & tv broad.)
  Script Writer, International Broadcast (radio & tv broad.)
Title Writer (motion pic.)
Writer, News-or-Script, Foreign Language (radio & tv broad.)
132. Writing and Editing, Publications
132.088 Copy Writer (profess. & kin.)
Critic (print. & pub.)
Editorial Writer (print. & pub.)
Lexicographer (profess. & kin.)
139. Writing, n.e.c.
139.088 Collaborator (profess. & kin.)
Cross-Word-Puzzle Maker (print. & pub.)
Editor, Greeting Card (print. & pub.)
Humorist (profess. & kin.)
Librettist (profess. & kin.)

JOURNALISM & EDITORIAL WORK

13 WRITING
131. Writing and Editing, Motion Pictures, Radio, and Television
131.038 Editor, Continuity and Script (radio & tv broad.)
Editor, News (radio & tv broad.)
  Editor, Foreign News, Broadcast (radio & tv broad.)
Editor, Scenario (motion pic.)
131.038 Manager, News, Special Events, and
Con. Public Affairs (radio & tv broad.)
131.068 News Analyst, Broadcast (radio & tv broad.)
Writer, News, International Broadcast (radio & tv broad.)
132. Writing and Editing, Publications
132.018 Editor, Managing, Newspaper (print. & pub.)
Editor, Newspaper (print. & pub.)
Manager, Technical-and-Scientific Publications (profess. & kin.)
132.038 Editor, City (print. & pub.)
Editor, Department (print. & pub.)
132.038 Editor, Editorial Page (print. & pub.)
Con. Editor, Financial (print. & pub.)
Editor, Sports (print. & pub.)
Editor, State (print. & pub.)
Editor, Trade-or-Technical Publication (print. & pub.)
Supervisor, Publications (profess. & kin.)
132.068 Columnist (print. & pub.)
Editor, Book (print. & pub.)
Editor, Cable, Syndicate (print. & pub.)
Editor, Magazine (print. & pub.)
Editor, News (print. & pub.)
News Specialist, Syndicate (print. & pub.)

CLERICAL

TYPESETTING, REPRODUCING AND RELATED MACHINE WORK

20 **STENOGRAPHY, TYPING, FILING, AND RELATED WORK**
203. **Typing**
203.582 VARI-TYPIST (clerical)
207. **Duplicating-Machine Work**
207.582 BRAILLE-DUPLICATING-MACHINE OPERATOR (clerical)
209. **Stenography, Typing, Filing, and Related Work, n.e.c.**
209.382 JUSTOWRITER OPERATOR (bus. ser.)
65 **PRINTING**
650. **Typesetting and Composing**
650.582 LINOFILM-MACHINE OPERATOR (clerical)
LINOTYPE OPERATOR (print. & pub.)
MONOTYPE-KEYBOARD OPERATOR (print. & pub.)
PHOTOTYPESETTER OPERATOR (print. & pub.)

BUSINESS

INFORMATION GATHERING, DISPENSING, VERIFYING, AND RELATED WORK

15 **ENTERTAINMENT AND RECREATION**
152. **Music**
152.368 PROMPTER (amuse. & rec.)
96 **AMUSEMENT, RECREATION, AND MOTION PICTURE WORK, N.E.C.**
962. **Radio and Television Production, n.e.c.**
962.368 SCRIPT ASSISTANT (amuse. & rec.)

INTERVIEWING, INFORMATION-GIVING, AND RELATED WORKS (VOCATIONAL, EDUCATIONAL, & RELATED ACTIVITY)

15 **ENTERTAINMENT AND RECREATION**
159. **Entertainment and Recreation, n.e.c.**
159.228 DIRECTOR, CASTING (motion pic.; radio & tv broad.)

ENGINEERING

DRAFTING & RELATED WORK

00 } 01 } **ARCHITECTURE AND ENGINEERING**
001. **Architecture**
001.281 DRAFTSMAN, ARCHITECTURAL (profess. & kin.)
002. **Aeronautical Engineering**
002.281 DESIGN DRAFTSMAN, RAM-JET ENGINE (profess. & kin.)
DRAFTSMAN, AERONAUTICAL (profess. & kin.)
ENGINEERING CHECKER (aircraft mfg.)
003. **Electrical Engineering**
003.281 DRAFTSMAN, ELECTRICAL (profess. & kin.)
DRAFTSMAN, RELAY (light, heat, & power)
DRAFTSMAN, ELECTRONIC (profess. & kin.)
ESTIMATOR AND DRAFTSMAN (light, heat, & power)
005. **Civil Engineering**
005.281 DESIGNER, HIGHWAYS (gov. ser.)
DRAFTSMAN, CIVIL (profess. & kin.)
DRAFTSMAN, STRUCTURAL (profess. & kin.)
007. **Mechanical Engineering**
007.181 DIE DESIGNER (mach. shop)
DIE CHECKER (mach. shop) I
DIE-DESIGNER APPRENTICE (mach. shop.)
ENGINEERING ASSISTANT, MECHANICAL EQUIPMENT (profess. & kin.)
007.281 DRAFTSMAN, MECHANICAL (profess. & kin.)
DRAFTSMAN, CASTINGS (profess. & kin.)
DRAFTSMAN, PATENT (profess. & kin.)
DRAFTSMAN, TOOL DESIGN (profess. & kin.)
LAY-OUT MAN AND CHECKER (profess. & kin.)
010. **Mining and Petroleum Engineering**
010.281 DRAFTSMAN, GEOLOGICAL (petrol. production)
DRAFTSMAN, DIRECTIONAL SURVEY (petrol production)
DRAFTSMAN, GEOPHYSICAL (petrol. production)
DRAFTSMAN, MINE (mining & quarrying)
014. **Marine Engineering**
014.281 DRAFTSMAN, MARINE (profess. & kin.)
DRAFTSMAN, HULL (profess. & kin.)
DRAFTSMAN, HYDRAULIC (ship & boat bldg. & rep.)
DRAFTSMAN, SHEET METAL (ship & boat bldg. & rep.)
DRAFTSMAN, SHIP ENGINEERING (profess. & kin.)
017. **Drafting and Related Work**
017.281 AUTO-BODY DESIGNER (auto. mfg.)
AUTO-BODY LAY-OUT DRAFTSMAN (auto. mfg.)
CABLE-LAY-OUT MAN (tel. & tel.)
DESIGN DRAFTSMAN, ELECTROMECHANISMS (profess. & kin.)
DETAILER (profess. & kin.)
AUTO-BODY-DESIGN DETAILER (auto. mfg.)
DETAIL MAN, FURNITURE (profess. & kin.)
DRAFTSMAN, DETAIL (profess. & kin.)
DRAFTSMAN, SHIP DETAIL (profess. & kin.)
DRAFTSMAN APPRENTICE (profess. & kin.)
017.281 Con. DRAFTSMAN, BLACK AND WHITE (profess. & kin.)
DRAFTSMAN, COMMERCIAL (profess. & kin.)
DRAFTSMAN, HEATING AND VENTILATING (profess. & kin.)
DRAFTSMAN, MAP (profess. & kin.)
DRAFTSMAN, OIL AND GAS (petrol. production; petrol. refin.)
DRAFTSMAN, PLUMBING (profess. & kin.)
DRAFTSMAN, REFRIGERATION (profess. & kin.)
DRAFTSMAN, TOPOGRAPHICAL (profess. & kin.)
MULTIPLEX-PROJECTION TOPOGRAPHER (profess. & kin.)
TECHNICAL ILLUSTRATOR (profess. & kin.)
TRACER (any ind.)

CRAFTS

PRECISION WORKING

96 AMUSEMENT, RECREATION, AND MOTION PICTURE WORK, N.E.C.
962. Motion Picture Production, n.e.c.
962.781 DRAPER (motion pic.)
964. Theatrical and Related Entertainment Production, n.e.c.
964.781 LAMP OPERATOR (amuse. & rec.)
97 GRAPHIC ART WORK
970. Art Work, Brush, Spray, or Pen
970.781 SPOTTER, PHOTOGRAPHIC (any ind.)
972. Lithography and Related Work
972.781 TRANSFERRER (print. & pub.) II
977. Bookbinding and Related Work
977.781 BOOKBINDER, HAND (print. & pub.)
979. Graphic Art Work, n.e.c.
979.781 ENGRAVER (print. & pub.) I
ENGRAVER, RUBBER (print. & pub.)
SKETCH MAKER (any ind.)
34 AMUSEMENT AND RECREATION SERVICES
346. Wardrobe and Dressing-Room Services
346.381 WARDROBE-SPECIALTY WORKER (motion pic.)
65 PRINTING
659. Printing, n.e.c.
659.781 DIE MOUNTER (paper goods)

COSTUMING, TAILORING, AND DRESSMAKING

96 AMUSEMENT, RECREATION, AND MOTION PICTURE WORK, N.E.C.
969. Miscellaneous Amusement, Recreation, and Motion Picture Work, n.e.c.
969.781 COSTUMER (motion pic.; radio & tv broad.)

CRAFTSMANSHIP & RELATED WORKS

96 AMUSEMENT, RECREATION, AND MOTION PICTURE WORK, N.E.C.
962. Motion Picture Production, n.e.c.
962.281 SPECIAL-EFFECTS MAN (motion pic.)
962.381 LIGHT TECHNICIAN (radio & tv broad.)
SET ELECTRICIAN, CHIEF, ASSISTANT (motion pic.)
964. Theatrical and Related Entertainment Production, n.e.c.
964.281 SIGHT-EFFECTS MAN (amuse. & rec.)
964.381 SPOTLIGHT OPERATOR (amuse. & rec.)
969. Miscellaneous Amusement, Recreation, and Motion Picture Work, n.e.c.
969.281 PROP MAKER (amuse. & rec.; motion pic.)
97 GRAPHIC ART WORK
970. Art Work, Brush, Spray, or Pen
970.281 AIRBRUSH ARTIST (profess. & kin.)
DELINEATOR (profess. & kin.) I
FORM DESIGNER (print. & pub.)
PAINTER, PLATE (print. & pub.)
PHOTOGRAPH RETOUCHER (any ind.)
970.381 BEN-DAY ARTIST (print. & pub.)
COLORIST, PHOTOGRAPHY (any ind.)
ENGROSSER (profess. & kin.)
INKER AND OPAQUER (motion pic.)
LAY-OUT MAN (signs) II
LETTERER (profess. & kin.)
MUSIC GRAPHER (print. & pub.)
PAINTER, ANIMATED CARTOONS (motion pic.)
PAINTER, HAND (any ind.) I
PAINTER, SIGN (any ind.)
  PAINTER, SIGN, MAINTENANCE (r.r. trans.)
  STENCIL CUTTER (com. & car bldg. & rep.)
REPEAT CHIEF (print. & pub.)
RETOUCHER, PHOTOENGRAVING (print. & pub.)
SKETCH MAKER, PHOTOENGRAVING (print. & pub.)
971. Photoengraving
971.281 ETCHER, HAND (print. & pub.)
LITHOGRAPHER (cal. & scales)
971.381 ETCHER APPRENTICE, PHOTOENGRAVING (print. & pub.)
PHOTOENGRAVER (print. & pub.) I
  ETCHER, PHOTOENGRAVING (print. & pub.)
  STRIPPER (print. & pub.)
PHOTOENGRAVER APPRENTICE (print. & pub.)
PHOTOENGRAVING FINISHER (print. & pub.)
PHOTOENGRAVING PRINTER (print. & pub.)
PHOTOENGRAVING PROOFER (print. & pub.)
PHOTOENGRAVING-PROOFER APPRENTICE (print. & pub.)
SCREEN MAKER, PHOTOGRAPHIC PROCESS (any ind.)
STRIPPER APPRENTICE (print. & pub.)
972. Lithography and Related Work
972.281 PROCESS ARTIST (print. & pub.)
PROCESS-ARTIST APPRENTICE (print. & pub.)
972.381 SKETCH MAKER (print. & pub.)
TRANSFERRER (print. & pub.) I
TRANSFERRER APPRENTICE (print. & pub.)
TRANSFERRER APPRENTICE, HAND (print. & pub.)
TRANSFERRER, HAND (print. & pub.)
973. Hand Composition, Typesetting, and Related Work
973.381 COMPOSITOR (print. & pub.)
COMPOSITOR APPRENTICE (print & pub.)
CORRECTION MAN (print. & pub.)
IMPOSER (print. & pub.)
JOB PRINTER (print. & pub.)
JOB-PRINTER APPRENTICE (print. & pub.)
MAKE-UP MAN (print. & pub.)
974. Electrotyping and Related Work
974.381 ELECTROTYPER (print. & pub.)
ELECTROTYPER APPRENTICE (print. & pub.)
976. Darkroom Work, n.e.c.
976.381 DEVELOPER (any ind.)
PROJECTION PRINTER (any ind.)
REPRODUCTION TECHNICIAN (any ind.)
TIMER (motion pic.)
979. Graphic Art Work, n.e.c.
979.281 DIE-MAKER (print. & pub.)
ENGRAVER, BLOCK (print. & pub.)
979.381 COPY CAMERAMAN (any ind.)
DOCUMENT RESTORER (profess. & kin.)
LETTERER (type founding)
LINE-UP MAN (print. & pub.)
MUSIC ENGRAVER (print. & pub.)
PASTE-UP MAN (print. & pub.)
PASTE-UP-MAN APPRENTICE (print. & pub.)
SIDEROGRAPHER (print. & pub.)
SILK-SCREEN CUTTER (any ind.)
SILK-SCREEN MAKER (glass mfg.)
STENCIL MAKER (fiber rugs)

ART

ART WORK

14 ART WORK
141. Commercial Art
141.081 Advertising Lay-Out Man (profess. & kin.)
Art Lay-Out Man (print. & pub.)
Cartoonist, Motion Pictures (motion pic.)
  Cartoon-Background Artist (motion pic.)
Color Adviser (motion pic.)
Cover Designer (profess. & kin.)
Illustrator (profess. & kin.)
  Background-and-Title Artist (motion pic.)
  Fashion Artist (ret. tr.)
Lay-Out Man (print. & pub.)
Medical Illustrator (medical ser.)
Miniature-Set Constructor (motion pic.)
Stipple Artist (print. & pub.)
142. Designing
142.081 Bank-Note Designer (gov. ser.)
Cloth Designer (profess. & kin.)
Clothes Designer (profess. & kin.)
Commercial Designer (profess. & kin.)
  Display Artist (profess. & kin.)
Crest-Pattern Maker and Sewer (trim. & stamp. art goods)
Designer, Fishing Lure (sports equip.)
Designer, Novelties (fabric. plastics prod.)
Embroidery Designer (embroid.; trim. & stamp. art goods)
142.081 Con. Fixture Designer (furn.)
Floral Designer (ret. tr.)
Furniture Designer (furn.)
Furrier (fur goods)
Furrier Apprentice (fur goods)
Handbag Designer (leather prod.)
Handbag-Frames Designer (profess. & kin.)
Hat Designer (hat & cap; ret. tr.)
Industrial Designer (profess. & kin.)
Information Specialist, Visual (gov. ser.)
Jewelry and Flatware Designer (jewelry; silverware)
Musical-Instrument-Case Designer (musical inst.)
Ornamental-Metalwork Designer (struct. & ornam. metalwork)
Package Designer (profess. & kin.)
Pottery-Decoration Designer (pottery & porc.)
Safety-Clothing-and-Equipment-Development Man (profess. & kin.)
Shoe Designer (boot & shoe)
Sign Designer (signs)
Sketcher (motion pic.)
Stage-Scenery Designer (amuse. & rec.)
  Miniature-Set Designer (motion pic.)
  Stage-Set Designer (motion pic.)
142.081 Con. Stained-Glass-Window Designer (profess. & kin.)
Stuffed Toy Designer (toys & games)
Tile Designer (brick & tile)
Toy Designer (toys & games)
Women's-Garment Designer (ret. tr.)
144. Painting and Related Work
144.081 Cartoonist (print. & pub.)
  Sketch Portraitist (profess. & kin.)
Cartoon Maker, Stained Glass (profess. & kin.)
Painter (profess. & kin.)
  Scenic Artist (motion pic.)
Painter, Glass (profess. & kin.)
148. Sculpturing and Related Work
148.081 Memorial Designer (stonework)
Modeler (brick & tile)
Sculptor (profess. & kin.)
29 MISCELLANEOUS MERCHANDISING WORK
298. Display Work
298.081 Display Man (ret. tr.) II
97 GRAPHIC ART WORK
970. Art Work, Brush, Spray, and Pen
970.081 Sign Writer, Hand (any ind.)
979. Graphic Art Work, n.e.c.
979.081 Print Maker (profess. & kin.)

ARTISTIC RESTORATION, DECORATION, & RELATED WORKS

10 MUSEUM, LIBRARY, AND ARCHIVAL SCIENCES
102. Museum and Related Work
102.381 Museum Technician (museum)
  Restorer, Lace and Textiles (museum)
109. Museum, Library, and Archival Sciences, n.e.c.
109.281 Armorer Technician (museum)
14 ART WORK
141. Commercial Art
141.281 Artist (wallpaper)
142. Designing
142.281 Copyist (garment)
Experimental Man (wood. box)
142.281 Con. Fur Designer (fur goods)
142.381 Sample Maker (jewelry) II
144. Painting and Related Work
144.281 Paintings Restorer (profess. & kin.)
148. Sculpturing and Related Work
148.281 Concrete Sculptor (conc. prod.)
149. Art Work, n.e.c.
149.281 Furniture Reproducer (furn.)
Model Maker (profess. & kin.)
  Architectural Modeler (profess. & kin.)
Wood Burner (jewelry)

PHOTOGRAPHY & MOTION-PICTURE CAMERA WORK

14 ART WORK
143. Photography
143.062 Cameraman (radio & tv broad.)
Cameraman, First (motion pic.)
Cameraman, Second (motion pic.)
Photographer Apprentice, Commercial (profess. & kin.)
Photographer Apprentice, Portrait (profess. & kin.)
Photographer, Commercial (profess. & kin.)
Photographer, News (print. & pub.)
Photographer, Portrait (profess. & kin.)
  Manager, Photograph Gallery or Studio (profess. & kin.)
Screen Reporter (motion pic.; radio & tv broad.)

JOB DESCRIPTIONS

The first two major steps of behavioral analysis have now been completed--job families selected and representative sets of jobs selected. The next step is to prepare job descriptions for those selected.

The following definitions will be used in the job analysis procedures.

1. Job is a group of positions that are identical with respect to their major or significant tasks and sufficiently alike to justify being covered by a single analysis.

2. Task is one or more competencies and is one of the distinct activities that constitutes logical and necessary steps in the performance of the worker. A task is created whenever human effort, physical or mental, is exerted to accomplish a specific objective.

3. Competency is the smallest step into which it is practicable to subdivide any work activity without analyzing separate motions, movements, and mental processes involved.

The job analysis procedure described on the following pages has been developed from the job analysis procedure used by the U. S. Department of Labor (Handbook for Analyzing Jobs, 1972). By using this procedure the highly organized and detailed information available in the DOT and Occupational Outlook Handbook may be easily integrated into competency statements.

Two categories of information are required for the analysis of a job. Each category is defined on the indicated page(s).

1. Work performed
    - a. Worker functions (p. 5)
    - b. Work fields (p. 7)
        - (1) Methods verbs (p. 7)
        - (2) Machines, tools, equipment, and work aids (p. 7)
    - c. Materials, products, subject matter, and services (p. 11)
2. Worker traits (p. 12)
    - a. Educational Preparation (p. 12)
    - b. Aptitudes (p. 12)
    - c. Temperaments (p. 12)
    - d. Interests (p. 12)

FROM DICTIONARY OF OCCUPATIONAL TITLES, VOLUME II, 1965

APPENDIX A

Explanation of Relationships Within Data, People, Things Hierarchies

Much of the information in this edition of the Dictionary is based on the premise that every job requires a worker to function in relation to Data, People, and Things, in varying degrees. These relationships are identified and explained below. They appear in the form of three hierarchies arranged in each instance from the relatively simple to the complex in such a manner that each successive relationship includes those that are simpler and excludes the more complex.[1] The identifications attached to these relationships are referred to as worker functions, and provide standard terminology for use in summarizing exactly what a worker does on the job by means of one or more meaningful verbs.

A job's relationship to Data, People, and Things can be expressed in terms of the highest appropriate function in each hierarchy to which the worker has an occupationally significant relationship, and these functions taken together indicate the total level of complexity at which he must perform. The last three digits of the occupational code numbers in the Dictionary reflect significant relationships to Data, People, and Things, respectively.[2] These last three digits express a job's relationship to Data, People, and Things by identifying the highest appropriate function in each hierarchy to which the job requires the worker to have a significant relationship, as reflected by the following table:

DATA (4th digit)		PEOPLE (5th digit)		THINGS (6th digit)	
0	Synthesizing	0	Mentoring	0	Setting-Up
1	Coordinating	1	Negotiating	1	Precision Working
2	Analyzing	2	Instructing	2	Operating-Controlling
3	Compiling	3	Supervising	3	Driving-Operating
4	Computing	4	Diverting	4	Manipulating
5	Copying	5	Persuading	5	Tending
6	Comparing	6	Speaking-Signaling	6	Feeding-Offbearing
7 8	No significant relationship	7	Serving	7	Handling
		8	No significant relationship	8	No significant relationship

DATA: Information, knowledge, and conceptions, related to data, people, or things, obtained by observation, investigation, interpretation, visualization, mental creation; incapable of being touched; written data take the form of numbers, words, symbols; other data are ideas, concepts, oral verbalization.

0 **Synthesizing:** Integrating analyses of data to discover facts and/or develop knowledge concepts or interpretations.

1 **Coordinating:** Determining time, place, and sequence of operations or action to be taken on the basis of analysis of data; executing determinations and/or reporting on events.

2 **Analyzing:** Examining and evaluating data. Presenting alternative actions in relation to the evaluation is frequently involved.

3 **Compiling:** Gathering, collating, or classifying information about data, people, or things. Reporting and/or carrying out a prescribed action in relation to the information is frequently involved.

4 **Computing:** Performing arithmetic operations and reporting on and/or carrying out a prescribed action in relation to them. Does not include counting.

5 **Copying:** Transcribing, entering, or posting data.

6 **Comparing:** Judging the readily observable functional, structural, or compositional characteristics (whether similar to or divergent from obvious standards) of data, people, or things.

PEOPLE: Human beings; also animals dealt with on an individual basis as if they were human.

0 **Mentoring:** Dealing with individuals in terms of their total personality in order to advise, counsel, and/or guide them with regard to problems that may be resolved by legal, scientific, clinical, spiritual, and/or other professional principles.

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[1] As each of the relationships to People represents a wide range of complexity, resulting in considerable overlap among occupations, their arrangement is somewhat arbitrary and can be considered a hierarchy only in the most general sense.

[2] Only those relationships which are occupationally significant in terms of the requirements of the job are reflected in the code numbers. The incidental relationships which every worker has to Data, People, and Things, but which do not seriously affect successful performance of the essential duties of the job, are not reflected.

1 **Negotiating:** Exchanging ideas, information, and opinions with others to formulate policies and programs and/or arrive jointly at decisions, conclusions, or solutions.

2 **Instructing:** Teaching subject matter to others, or training others (including animals) through explanation, demonstration, and supervised practice; or making recommendations on the basis of technical disciplines.

3 **Supervising:** Determining or interpreting work procedures for a group of workers, assigning specific duties to them, maintaining harmonious relations among them, and promoting efficiency.

4 **Diverting:** Amusing others.

5 **Persuading:** Influencing others in favor of a product, service, or point of view.

6 **Speaking-Signaling:** Talking with and/or signaling people to convey or exchange information. Includes giving assignments and/or directions to helpers or assistants.

7 **Serving:** Attending to the needs or requests of people or animals or the expressed or implicit wishes of people. Immediate response is involved.

THINGS: Inanimate objects as distinguished from human beings; substances or materials; machines, tools, equipment; products. A thing is tangible and has shape, form, and other physical characteristics.

0 **Setting Up:** Adjusting machines or equipment by replacing or altering tools, jigs, fixtures, and attachments to prepare them to perform their functions, change their performance, or restore their proper functioning if they break down. Workers who set up one or a number of machines for other workers or who set up and personally operate a variety of machines are included here.

1 **Precision Working:** Using body members and/or tools or work aids to work, move, guide, or place objects or materials in situations where ultimate responsibility for the attainment of standards occurs and selection of appropriate tools, objects, or materials, and the adjustment of the tool to the task require exercise of considerable judgment.

2 **Operating-Controlling:** Starting, stopping, controlling, and adjusting the progress of machines or equipment designed to fabricate and/or process objects or materials. Operating machines involves setting up the machine and adjusting the machine or material as the work progresses. Controlling equipment involves observing gages, dials, etc., and turning valves and other devices to control such factors as temperature, pressure, flow of liquids, speed of pumps, and reactions of materials. Setup involves several variables and adjustment is more frequent than in tending.

3 **Driving-Operating:** Starting, stopping, and controlling the actions of machines or equipment for which a course must be steered, or which must be guided, in order to fabricate, process, and/or move things or people. Involves such activities as observing gages and dials; estimating distances and determining speed and direction of other objects; turning cranks and wheels; pushing clutches or brakes; and pushing or pulling gear lifts or levers. Includes such machines as cranes, conveyor systems, tractors, furnace charging machines, paving machines and hoisting machines. Excludes manually powered machines, such as handtrucks and dollies, and power assisted machines, such as electric wheelbarrows and handtrucks.

4 **Manipulating:** Using body members, tools, or special devices to work, move, guide, or place objects or materials. Involves some latitude for judgment with regard to precision attained and selecting appropriate tool, object, or material, although this is readily manifest.

5 **Tending:** Starting, stopping, and observing the functioning of machines and equipment. Involves adjusting materials or controls of the machine, such as changing guides, adjusting timers and temperature gages, turning valves to allow flow of materials, and flipping switches in response to lights. Little judgment is involved in making these adjustments.

6 **Feeding-Offbearing:** Inserting, throwing, dumping, or placing materials in or removing them from machines or equipment which are automatic or tended or operated by other workers.

7 **Handling:** Using body members, handtools, and/or special devices to work, move, or carry objects or materials. Involves little or no latitude for judgment with regard to attainment of standards or in selecting appropriate tool, object, or material.

NOTE: Included in the concept of Feeding-Offbearing, Tending, Operating-Controlling, and Setting Up, is the situation in which the worker is actually part of the setup of the machine, either as the holder and guider of the material or holder and guider of the tool.

Work Fields

Work fields are organizations of specific methods that are either (1) characteristic of machines, tools, equipment, or work aids, and directed at common objectives, or (2) characteristic of the techniques designed to fulfill socioeconomic purposes. The one hundred Work Fields organized by the Department of Labor are provided in the following list. Although a job may involve techniques specific to a number of work fields, it should be characterized in terms of those fields having primary involvement. Each work field has a list of methods verbs and its characteristic machines, tools, equipment, and work aids. (Methods verbs are those verbs which are commonly used to denote the specific methods of performing the work. Machines, Tools, Equipment, and Work Aids will often be referred to as MTEWA.)

WORK FIELDS

Alphabetical Listing of Work Fields

Abrading
Accommodating
Accounting-Recording
Administering
Appraising

Baking-Drying
Blasting
Bolting-Screwing
Boring
Brushing-Spraying
Butchering

Calking
Casting
Chipping
Cleaning
Combing-Napping
Composing
Cooking-Food Preparing
Cropping
Crushing

Die Sizing
Developing-Printing
Distilling
Drafting

Electrical Fabricating-Installing-Repairing
Electronic Fabricating-Installing-Repairing
Electro-Mechanical Fabricating-Installing-Repairing
Electroplating
Engineering
Engraving
Entertaining
Eroding
Etching

Filling
Filtering-Straining-Separating
Fitting-Placing
Flame Cutting-Arc Cutting
Folding-Fastening

Gardening
Gluing

Healing-Caring
Heat Conditioning
Hoisting-Conveying
Hunting-Fishing

Immersing-Coating
Imprinting
Information Giving
Investigating
Ironing

Knitting

Laying
Laying Out
Litigating
Loading-Moving
Logging
Lubricating

Machining
Masoning
Mechanical Fabricating-
 Installing-Repairing
Melting
Merchandising
Milling-Turning-Planing
Mining-Quarrying-Earth Boring
Mixing
Molding

Nailing

Packing
Painting
Photographing
Pressing-Forging
Printing
Processing-Compounding
Protecting
Pumping

Recording
Researching
Riveting

Saturating
Sawing
Sewing-Tailoring
Shearing-Shaving
Soldering
Spinning
Stationary Engineering
Stock Checking
Structural Fabricating-
 Installing-Repairing
Styling
Surveying
System Communicating

Teaching
Transporting
Troweling

Undertaking
Upholstering

Weaving
Weighing
Welding
Winding
Wrapping
Writing

The following are examples of a few of the work fields. The methods verbs, machines, tools, equipment, and work aids are not all inclusive; rather they are for illustration only.

WRITING — 261

Reporting, editing, promoting, and/or interpreting ideas in written form.

Methods Verbs

Adapting
Criticizing
Depicting
Describing
Editing
Proofreading
Reading
Reporting

Machines	Tools	Equipment	Work Aids
Typewriter	Writing Implements	Camera Tape Recorder Two-Way Radio	Charts Interview Forms Reference Books

PRINTING — 191

Reproducing records of data or designs by mechanical transfer of ink or dye to surface of material by use of type, plate, dies, stencils, and the like. Includes preparation of type or plates, which may involve a combination of methods specific to work fields such as *Casting, Molding, Etching, Engraving, Shearing-Shaving, Developing-Printing, Photographing,* and *Imprinting.*

Methods Verbs

Branding
Coating
Composing
Dampening
Immersing
Inking
Measuring
Moistening
Setting (type)
Stamping
Stenciling
Whirling

Machines	Tools	Equipment	Work Aids
Linotype Machine	Brushes	Drying Oven	Assembly Stick
Ludlow Machine	Burnishing Tools	Line Camera	Chase
Monotype Machine	Files		Imposing Stone
Plate Burner	Knives		Light Table
Printing Presses			Make-Up Sheet
Routing Machine			Negative Masks
Teletypesetter			Printing Chemicals
Typesetter-Perforator Machine			Screens
			Sensitized Films and Papers
			Solvents
			Specifications
			Stencils
			Wood-Fiber Matting

ENTERTAINING — 297

Exhibiting specialized artistic, physical, or mental skills to audience.

Methods Verbs

Acting
Conducting
Dancing
Demonstrating
Impersonating
Lecturing
Mystifying
Performing (tricks)
Portraying
Reading
Rehearsing
Singing
Staging

Machines	Tools	Equipment	Work Aids
Boats	Hand Puppets	P.A. Systems	Baseball
Racing Car			Basketball
Stunt Airplane			Cards
			Costumes
			Highwire and Trapeze
			Makeup
			Mats
			Musical Instruments
			Nets
			Props
			Scripts

DEVELOPING-PRINTING — 202
(Printing-Developing)

Reproducing records of data or designs by chemical means.

Methods Verbs

- Coating
- Drying
- Exposing
- Immersing
- Rubbing
- Soaking
- Spotting
- Whirling

Machines	Tools	Equipment	Work Aids
Developing Machines		Dryers	Developer Dryer
Film Processing Machines		Enlargers	Easels
Mounting Machine		Printers	Formulas
		Weight Scales	Liquid Tanks
			Pencils
			Retouching Fluids
			Sensitized Films
			Sensitized Paper
			Slicing Board
			Sponges
			Stop Baths
			Tongs

PHOTOGRAPHING — 201

Producing a record (image) of things, people, places, or data by a chemical change in the surface of the product or by electronic means induced by light or similar waves.

Methods Verbs

- Exposing
- Masking
- Posing
- Projecting

Machines	Tools	Equipment	Work Aids
		Cameras	Charts
		Flash Units	Distance Measuring Devices
		Flood Lights	Film Holders
		Power Packs	Measuring Scales
			Tables
			Tripods

PAINTING — 262

Creating and reproducing designs of lettering, or depicting ideas, using tools such as pencils, crayons, brushes, or spray guns. Distinguish from *Brushing-Spraying* and *Immersing-Coating* which are for the purpose of covering without producing designs or lettering.

Methods Verbs

Blanking Out
Coloring
Drawing
Inking
Lettering
Rubbing
Shading
Sketching
Spotting Out
Spraying
Tinting
Touching Up
Wiping

Machines	Tools	Equipment	Work Aids
Lettering Machine	Air Brush	Camera	Canvas
Spray Machine	Burnishing Tools	Projectors	Charts
	Charcoal		Diagrams
	Handtools		India Ink
	Knives		Letters
	Pencils		Magnifying Glasses
	Pens		Oil Paints
	Spray Guns		Plastics
			Reducing Glasses
			Tempera
			Templates
			Water Colors

COMPOSING — 263

Expressing and interpreting ideas in musical form, or creating dynamics of movement to interpret music.

Methods Verbs

Arranging
Copying
Harmonizing
Orchestrating
Scoring
Translating
Transposing
Writing

Machines	Tools	Equipment	Work Aids
	Pencils	Tape Recorder	Choral Slide Rule
	Pens		Piano
			Reference Books
			Staff Paper
			Various Musical Instruments

Materials, products, subject matter, and services (MPSMS) include the (1) basic materials being processed, (2) final products being made, (3) data or information when being dealt with or applied, and (4) services such as dentistry, insurance, and education.

Worker Traits

Worker traits are the requirements made on the worker in terms of aptitudes, general educational development, career preparation, physical demands, and personal traits. Information about these job facets provides a sharper focus on the type of work involved and the nature of the individual worker. They are extremely helpful in counseling and attitude development.

Educational Preparation is the general amount of educational development and specific career preparation required of a worker.

Aptitudes are the specific capacities or abilities required of an individual to foster the learning of some tasks or job responsibilities.

Temperaments are actually the adaptability of the individual to adjust to various occupational situations.

Interests are the tendencies of an individual to become absorbed in an experience and to continue the experience.

Sentence Analysis

Sentence analysis is a technique used in writing job descriptions in standard, concise form. This technique results in brief declarative sentences describing a job, a task, or a competency. The chart on the next page serves as a framework of the analysis. Notice that each sentence analysis has an implied subject, a verb, object, and modifying infinitive phrase.

Verb	Immediate Object	Infinitive Phrase	
		Infinitive	Object of Infinitive
Worker Function	MTEWA, Data, People	Work Field	MPSMS
Compares (DATA)	switchboard operation with standards	to relay	calls
Converses with (PEOPLE)	Callers	to convey or receive	information
Operates (THINGS)	Cord or cordless switchboard	to relay	incoming, outgoing, and interoffice calls.

The subject is always the worker. (This is implied but not expressed.)

The verb, which always begins the sentence, is synonymous with one of the worker functions.

The immediate object is either data, people, or things (materials, tools, equipment, work aids).

The infinitive phrase has a varying influence as a modifier. The infinitive is the work field and the object of the infinitive is included within materials, products, subject matter, and services.

Examples of summaries of jobs that were developed using this technique are presented on the following pages.

SENTENCE ANALYSIS

Application of Sentence Analysis

The italicized words are the Work Performed Components: *Worker Functions; Work Fields; Materials, Products, Subject Matter,* and *Services* (MPSMS). The worker is the subject of all sentences.

VERB (*WORKER FUNCTION*)	IMMEDIATE OBJECT	INFINITIVE PHRASE	
		INFINITIVE (*WORK FIELD*)	OBJECT OF INFINITIVE (*MPSMS*)
Synthesizes *SYNTHESIZING*	ideas and information	to write *WRITING*	fiction, etc. *Literature*
Coordinates *COORDINATING*	information about student activities	to administer *ADMINISTERING*	educational program. *Educational*
Analyzes *ANALYZING*	examination papers	to evaluate *INVESTIGATING*	Knowledge of law candidates. *Law*
compiles *COMPILING*	credit information	to determine *INVESTIGATING*	credit rating. *Finance*
computes *COMPUTING*	hours, pay scale, etc.	to calculate and post *ACCOUNTING-RECORDING*	wages. *Bookkeeping*
copies *COPYING*	figures from cash remittance	to post to *ACCOUNTING-RECORDING*	cash journal. *Business Accounting*
compares *COMPARING*	appearance of hides with specifications	to grade *APPRAISING*	hides. *Hides and Skins*
advises *MENTORING*	students	to effect adjustment of *HEALING—CARING*	students. *Guidance and Advisory Services*
negotiates (with)	sellers	to buy	wool.
instructs *INSTRUCTING*	children	to teach *TEACHING*	academic subjects. *Educational Services*
supervises *SUPERVISING*	miners	to mine *MINING-QUARRYING-EARTH BORING*	ore. *Raw Materials, Mining* (Metallic Minerals)
persuades *PERSUADING*	families	to buy *MERCHANDISING*	products, services, etc. *Merchandising Services*
describes *SPEAKING-SIGNALING*	features of interest	to inform *INFORMATION-GIVING*	visitors to factory. *Lecturing Services*
serves *SERVING*	patrons	to accommodate *ACCOMMODATING*	patrons. *Personal Services, n.e.c.*
receives *TAKING INSTRUCTIONS-HELPING*	instructions from supervisor	to drill holes in *BORING*	watch parts. *WATCHES AND CLOCKS*
sets up *SETTING UP*	metal-working machines	to machine *MACHINING*	metal patterns, core boxes. *Special Industry, Machinery, & Equipment, n.e.c.*
works *PRECISION WORKING*	tooth-cleaning instruments	to clean *HEALING-CARING*	teeth. *Dental Services*

Application of Sentence Analysis—Continued

VERB (*WORKER FUNCTION*)	IMMEDIATE OBJECT	INFINITIVE PHRASE	
		INFINITIVE (*WORK FIELD*)	OBJECT OF INFINITIVE (*MPSMS*)
operates *OPERATING-CONTROLLING*	saw	to cut to size *SAWING*	metal materials. *METAL, FERROUS AND NONFERROUS*
pilots *DRIVING-OPERATING*	airplane	to convey *TRANSPORTING*	passengers. *Airplane Transportation*
manipulates *MANIPULATING*	parts of toys	to assemble *FITTING-PLACING*	entire toy. *Games and Toys*
tends *TENDING*	sanding machine	to smooth *ABRADING*	broomsticks. *Wooden Articles*
feeds *FEEDING-OFF-BEARING*	blending machine	to blend *MIXING*	flour. *Grain Mill Products*
handles *HANDLING*	shovel, pick	to fill *TROWELING*	holes in road. *Highways and Streets*

Example 1.

Job Worker Situation: Compares positive motion picture films with reference prints to detect irregularities in detail and color. Signals operator to project positive motion picture film on screens. Compares positive film with reference print for color density and picture definition. Rejects films having defects, such as blurs, scratches, and perforations.

Analysis

VERB (WORKER FUNCTION)	IMMEDIATE OBJECT (MTEWA,DATA,PEOPLE)	INFINITIVE PHPASE	
		INFINITIVE (WORK FIELD)	OBJECT OF INFINITIVE (MPSMS)
Compares	positive film with reference prints	to detect	film irregularities.
Signals	operator	to project	film reference prints.
Handles	films & prints	to reject	defective films.

Example 2.

Job Worker Situation: Composes narrative, dramatic, or lyric poetry, for magazines, books, or other publications, usually on freelance basis, choosing own subject matter and suitable form to express personal feeling and individual experience, or to narrate story or event.

Analysis

VERB (WORKER FUNCTION)	IMMEDIATE OBJECT (MTEWA,DATA,PEOPLE)	INFINITIVE PHRASE	
		INFINITIVE (WORK FIELD)	OBJECT OF INFINITIVE (MPSMS)
Integrates	subject matter, form, style	to write	poetry.
Converses with	colleagues	to discuss	poetry.
Handles	writing materials	to write	poetry.

Using the forms provided, prepare summaries of the jobs that were selected in the first and second steps of Behavioral Analysis.

Task Descriptions

A task description is a list of job activities stated in essentially physical terms. For each job description list the tasks performed for the job. Each task description must designate the worker's actions and the results that are accomplished; the machines, tools, equipment, and/or work aids used; materials, products, subject matter, or services involved; and the requirements made of the worker. The descriptions should be compatible with the work performed and the worker traits. Use the framework of sentence analysis (implied subject, action verb, object, and infinitive phrase) to write the tasks.

Examples of the tasks are provided on the following pages.

Examples of Tasks

Takes photographs of events to communicate happenings to readers of publications.

Plays roles in motion-picture, stage, or television productions by interpreting characters to audience.

Draws illustrations for advertisements of goods or services.

Manages classified advertising department of daily newspaper.

Creates or adapts musical compositions for television or motion-picture background themes.

Interviews newsworthy persons to gather information for newspaper articles or news broadcasts.

Draws sketches to illustrate scientific books and technical manuals.

Determines microphone placement for stage and motion-picture productions.

Proofreads newspaper galleys for typographical errors.

Operates linotype machine in print shop.

Paints still life, abstract designs, and other compositions, using appropriate art materials.

Writes plays for subsequent production, or for presentation on radio or television.

Teaches band music to high school students and conducts band concerts.

Creates dramatic lighting effects for stage or motion picture productions.

Conducts symphony orchestra.

Writes daily newspaper column reflecting contacts with political leaders and other public personalities.

Plays leading role in stage, television, or motion picture production.

Sets up and operates offset printing press to print single and multicolor copy from lithographic printing plates.

Supervises and coordinates activities of workers engaged in laying out copy, setting type, and operating presses.

Sets up and operates power cutting tools to trim electrotype or stereotype plates and mounts plates on wood or metal blocks for use in printing press.

Photosensitizes metal plates and exposes sensitized plates to artificial light through negatives on positives to transfer images to plates.

Tends machine that automatically cuts stencils for mimeograph-type duplicating.

Slides original and sensitized paper into ammonia solution to expose and develop blueprints.

Places exposed photographic film or sensitized paper in series of chemical and water baths to produce negative or positive prints.

Tends machines that automatically develop, fix and impart gloss to color photographs, using mixed solutions, such as developer dyes, stop baths, fixers, bleaches, and washes.

Operates and regulates speed of motion-picture-film-developing machine to insure required density of image being produced.

Tends machine that develops and dries exposed motion picture film.

Operates a camera to make picture of persons, motion-picture sets, merchandise, exteriors and interiors, machinery, and fashions.

Controls x-ray equipment to make picture of plant and animal tissue.

Tends equipment that photographs original documents and records, such as deeds, wills, statements, vouchers, and checks.

Entertains audiences by reading and interpreting roles to portray different characters, and adapts material presented, using book or script.

Speaks in such a manner that voice appears to come from source other than own vocal chords, frequently from dummy or hand puppet.

Performs difficult and spectacular feats, such as leaping, tumbling, and balancing, alone or as team member, using original or stock presentation.

Pilots airplane to perform stunts and aerial acrobatics at fairs and carnivals.

Conducts instrumental musical groups, such as orchestras and dance bands.

Reviews and rewrites news copy and edits copy to insure conformance to accepted rules of style and syntax, and to shorten or lengthen items to fit allocated space on newspaper pages.

Analyzes news and writes syndicated articles for newspaper publication.

Writes newspaper stories conforming to prescribed editorial techniques and format after collecting and analyzing facts about newsworthy events.

Composes advertising copy for radio or television commercial scripts.

Edits newspaper or magazine copy for errors in spelling, punctuation, or grammar, according to accepted rules of style and syntax.

Creates and writes musical compositions.

Transcribes musical compositions or melodic lines to adapt or create particular style for orchestra, band, choral group, or individual.

Writes musical score for orchestra, band, or choral group, adapting arrangement for interpretation best suited to performers.

Creates original dances for ballet performance, musical show, or revue.

Copies musical parts onto staff paper from score written by arranger or orchestrator, for each instrument or voice within musical group.

Decorates store windows with merchandise displays.

Makes tooled leather belts and decorates them with brass or silver inlays.

Letters, freehand, names and symbols on windows of retail establishment.

Plans advertising or public relations campaign for organization, service, or product.

Paints portraits of famous persons.

Sculpts statuary for sale or display.

Task Analysis

Task analysis is a procedure to determine what competencies are required to perform the task. The competencies will include not only performances but also knowledge required.

The following is a sample listing of categories of knowledge and information that may prove useful for task analysis:

1. The nomenclature of the job
2. General information about common materials, tools, and equipment
3. The clues, signals, and indications to look for
4. The interpretation of symbols, signals, or cues
5. The expected outcomes of actions and decisions
6. The steps in standard and emergency procedures
7. The precautions to take
8. Methods (rules) for preplanning work
9. Methods (rules) for following strict procedural guides
10. Strategies for problem-solving, diagnosing, and trouble shooting
11. Strategies for improvising and inventing when necessary

The above list does not include all the specific types of knowledge needed, but it does outline the general areas of knowledge that have to be dealt with.

Your workshop leader will assign you to a group and explain the task analysis procedures that you will be using. The competencies which you will determine should be written according to sentence analysis formats.

Establishing Competencies

The competency statements which have been written in the previous exercise represent both job competencies and continuing education competencies. Often the same competency will appear in several jobs within a cluster or program. Therefore, the last step is to examine the written competencies to insure that they not only represent major skills, principles, and concepts but that there are no duplicate competencies.

APPENDIX D

(1) INFORMATION PACKET 1--PRE-ASSESSMENT FOR WRITING PERFORMANCE OBJECTIVES FOR INSTRUCTION

(2) INFORMATION PACKET 2--PRE-ASSESSMENT FOR VALIDATING PERFORMANCE OBJECTIVES FOR INSTRUCTION

INFORMATION PACKET #1

PRE-ASSESSMENT FOR WRITING PERFORMANCE OBJECTIVES FOR INSTRUCTION

WRITING PERFORMANCE OBJECTIVES FOR INSTRUCTION

A Program for Members of the Education Profession for Effective Development and Statement of Aims and Goals for Instruction

General Objective:

This programmed instructional presentation will enable the teacher (hereafter referred to as the student or the learner) to create an effective learning package based on measurable performance objectives.

Specific Objectives:

1. The student will be able to recognize and list the differences between:
    a. Teaching objectives and performance objectives
    b. Performance objectives and learning activities
    c. Competencies and performance objectives
2. The student will be able to define "performance objective" in terms of its necessary components.
3. The student will be able to identify performance objectives contained within mixed lists of competencies and performance objectives.

INSTRUCTIONS FOR TAKING THE LESSON

As you work through this lesson, fill in the blank(s) with the word(s) of your choice. At the end of the lesson, you will be given the answers with which to check your responses. For those that do not correspond, read the information again until it is clear to you why an indicated answer is correct. There is no time limit; work at your own comfortable rate of speed.

Now turn the page and begin the lesson.

1. The defining of objectives is a must for successful teaching.

   One of the requirements for successful teaching is the ____________ of objectives.

2. Educational objectives are statements of the aims or goals of a unit or segment of the educational process.

   Aims or goals of education are stated as educational _______________.

3. Teaching objectives are written in terms of what the teacher will try to do.

   Objectives stating or describing aims of goals for the teacher are ________________objectives.

4. Performance objectives are written in terms of what the student will be able to do at the conclusion of a learning package.

   The aims or goals for student achievement are stated as _______________ objectives.

5. "I shall teach the students the importance of the Magna Carta."

   This goal or aim is written in terms of what the teacher will try to do; hence, it is a ___________________objective.

6. "The student will be able to write an essay on the historical importance of the Magna Carta."

   This objective is written in terms of what the student will be able to do; hence, it is a _______________objective.

7. A performance objective should not be confused with a learning activity. A learning activity is a step to employ in the realization of a performance objective.

   A step to take in the attainment of a performance objective is a ________.
   ____________________________.

8. Performance objectives are the goals of the various learning activities.

   Learning activities are steps to take in reaching _____________________.

9. "The class will take a field trip to a local printing shop."

   This statement describes an activity for the class; hence, it is a step toward realization of a performance objective and is classified as a ____________________________.

10. "The class members will be able to take part in a discussion of the role of communication in our modern economy."

This is a statement of what students will be able to do, possibly after a field trip; hence, this is a ____________________________.

11. For review of this point, study these statements and make responses as indicated:

a. "Teach students to figure square roots."

Since this statement is in terms of a goal for the teacher, it is a ___________________objective.

b. "Students will do the practice exercises in finding square roots of numbers on pages 267-273 of the text."

This statement describes an activity or step to be used in reaching a performance objective. It is therefore a _________________.

12. Before other points are presented in this program, let's check your understanding of the differences in the concepts of performance objectives, teaching objectives, and learning activities.

a. A teaching objective is written in terms of what the _____________ will try to do, whereas a performance objective is written in terms of what the __________________will be able to do at the unit's conclusion.

b. The aims or goals for student achievement are stated as ___________ __________________. As a teacher strives to have students achieve these goals, he will have the students take part in various steps to learning called ______________________________.

13. A learning package will be given direction if planning begins with the writing of performance objectives that are clear and well constructed.

Clear performance objectives give a learning package ________________.

14. The teacher will find it easier to determine necessary subject matter content for a learning package by establishing clear performance objectives.

Performance objectives help to determine a learning package's _________.

15. Methods or procedures to be used in a learning package are more easily established if the teacher has clear performance objectives as a basis of planning.

Performance objectives help to determine teaching __________________.

16. Many of the materials needed to effectively learn can be determined by studying the performance objectives for the learning package.

A study of the performance objectives for a learning package can reveal many of the needed teaching ________________________.

17. Methods of evaluation are also indicated by the performance objectives.

Since the performance objectives are written in terms of what the student or learner will be able to do, these performance objectives provide guidelines for methods of ____________________________.

18. The content, methods, materials and evaluation portions of a learning package will be determined by the instructional learning objectives for the package.

The performance objectives for a learning package, if clearly stated, will determine the package's ____________________, __________________, _________________________, and ____________________.

19. Competency statements are written in terms of the learner's terminal behavior, and come under two classifications, career (job-specific) and knowledge (academic).

The two classifications of competency statements are ___________________ and ____________________.

20. Competency statements can serve the important functions of establishing the broad framework for curriculum planning and of establishing a basis for specific planning in constructing learning packages.

The initial plans and the broad framework for the creation of learning packages and curriculum plans can be established through _______________ ___________________.

21. While competency statements serve as a guide in establishing a broad framework for planning, performance objectives are the ones that are the most useful in determing instructional content, methods, materials, and evaluation.

Performance objectives are more detailed than _________________________ _______________________ and therefore are more useful in determining instructional content, methods, materials, and evaluation.

22. A performance objective is a statement which describes aims or goals in terms of measurable terminal behavior of the student after he will have completed various learning activities.

A statement that describes measurable terminal desired student behavior is a _________________________ objective.

23. A performance objective is quite often referred to as a behavioral objective. The two terms are interchangeable.

Another name for a performance objective is a ____________________ objective.

24. A performance objective must be written in terms of student behavior. This means that the objective describes a goal for student achievement.

A performance objective must describe student achievement goals and must therefore be written in terms of ____________ ________________.

25. Performance objectives must be written in terms of terminal student behavior. This means that the objective describes what the student will be able to do after he has experienced various learning activities.

Since a performance or behavioral objective describes what a student will be able to do at the conclusion of a learning sequence, the objective is said to be written in terms of ___________________ student behavior.

26. Another requirement for a behavioral objective is that it be measurable, or at least observable. This means that the objective should be written in such a way that a means of evaluation of student achievement is evident.

A performance or behavioral objective should provide means for student evaluation; therefore, it must describe a ___________________ student behavior.

27. Now study the definition of a performance or behavioral objective again. "A performance objective is a statement which describes aims or goals in terms of measurable terminal behavior of the student after he will have completed the learning activities."

a. Since the objective must provide a means for evaluation of the student, it must be written to describe a __________________ behavioral goal.

b. Because a performance objective describes goals for the conclusion of the package, it must be written to describe a _________________ goal.

c. A performance objective describes a goal for student achievement; therefore, it is written in terms of ________________ behavior.

d. Another name for performance objectives, because of their student behavior orientation, is _____________________ objectives.

28. The quality of instruction can be improved through the writing of performance objectives because they allow for more appropriate evaluation procedures, a better selection of learning activities, and an improved quality of goals for the learner.

Performance or behavioral objectives can be used to improve the quality of instruction because they help to provide:
a. A better selection of learning ________________________.
b. More appropriate procedures for ________________________.
c. Higher quality student or learner ______________________.

Teachers should learn to write performance objectives in terms of measurable terminal student behaviors because they give direction to the learning process and tend to improve the ____________________ of ______________________.

29. Often general instructional objectives are written to describe student achievement in terms of understanding, appreciating, knowing, and comprehending. These are conceptual abstrations that in themselves are difficult to measure.

Objectives that describe a behavior that is difficult to measure such as understanding, appreciating, knowing, and comprehending are usually classified as _______________________ objectives.

30. "The students will develop an appreciation of the music of Chopin and Bach."

This objective is stated in terms of goals of the teacher for the student when the package is completed. It is clear and concise. But is the development of an appreciation a behavior, and is it measurable? (yes or no)_____________.

Because this objective is not stated in terms that describe measurable terminal student behavior, it is not a performance or behavioral objective. It must be classified as a ________________________ objective.

31. "After studying classical music, the student will be able to write a short comparison of the musical stylings of Chopin and Bach."

Think about these questions: Is the above objective stated in terms of what the student will be able to do at the conclusion of the learning package? Is the writing of a comparison a behavioral act and can it be measured or evaluated?

You should have mentally answered these questions with an affirmative answer. The objective as stated then meets the requirements for a behavioral or _______________________ objective.

32. Based on what you have learned by working through the programmed lesson to this point, classify each of the following objectives as general (G) or performance (P). Keep in mind the necessary definitive requirements of a performance objective.

a. "The student will be able to draw the basic floor plans of the Globe Theatre." ______________________

b. "The student will be able to construct an end table and properly apply a stain and finish to it." ______________________

c. "The student will comprehend why good nutrition is important." ______________________

d. "The student will be able to recite the poem, The Raven." ____________

e. "The student will be able to appreciate the art of the 18th century Spanish painters." ______________________

f. "The student will be able to write a performance objective in terms of terminal student behavior that is measurable." ________________

g. "The student will know the differences between general and performance objectives." ______________________

h. "The student will be able to write a performance and a general objective and orally discuss their differences." ______________________

i. "The student will be able to select behavioral objectives from a mixed list containing general and performance objectives."________________

(Note: If you responded incorrectly to more than two of the nine classification choices, or if you do not understand why some objectives were classified as they were, turn back to numbers 21, 23, 29, 30, 32, 33, and 34 for review.)

INFORMATION PACKET #2

PRE ASSESSMENT FOR
VALIDATING PERFORMANCE OBJECTIVES
FOR INSTRUCTION

VALIDATING PERFORMANCE OBJECTIVES FOR INSTRUCTION

The Second in a Series of Programmed Lessons for Members of the Education Profession for Effective Development and Statement of Aims and Goals for Instructional Units

General Objective:

This programmed instructional presentation will enable the teacher (hereafter referred to as the student or learner) to determine the validity of objectives for instructional units.

Performance Objectives:

1. The student will be able to test stated performance objectives according to the requirements that they be:
    a. Written in terms of goals for the learner
    b. Written in terms of goals that are terminal
    c. Written to describe behaviors that are measurable, or at least observable
2. The student will be able to classify performance objectives for instruction according to the taxonomy of the cognitive (concepts), psychomotor (skills), and affective (attitudes and values) domains.
3. The student will be able to validate performance objectives by evaluating their usefulness and worth with regard to:
    a. Student behavior desired as a terminal goal;
    b. Value of the objective to the student
    c. Variety of behavioral goals reflected in the objectives
4. The student will be able to write valid performance objectives for a unit to be taught in terms of measurable student behavior.

INSTRUCTIONS FOR TAKING THE LESSON

As you work through this lesson, fill in the blank(s) with the word(s) of your choice. Then following completion of the lesson, you can check your responses by use of the answer key which will be provided at that time. Should one of your responses not correspond with the answer, re-read the information again until it is clear to you why the indicated answer is correct. There is no time limit; work at your own comfortable rate of speed.

Now turn the page and begin the program.

1. Competency statements can serve the important functions of establishing the broad framework for curriculum planning and of establishing a basis for specific planning in constructing learning packages.

   The initial plans and the broad framework for the creation of learning packages and curriculum plans can be established through ______________ ____________________.

2. While competency statements serve as a guide in establishing a broad framework for planning, the performance objectives are the ones that are more useful in determining unit content, methods, materials, and evaluation techniques.

   Performance objectives are more detailed than ____________ __________ and are therefore more useful in determining the content, methods, materials, and evaluation techniques for learning packages.

3. Before continuing with this lesson, which is a comprehensive study of performance objectives and how to determine their validity, be sure that you understand the basic differences between competency statements and performance objectives.

   a. If a teacher wishes to establish very broad aims or goals to serve as a framework for a unit or curriculum, he will develop ___________ ________________.

   b. If a teacher wishes to establish objectives that will aid in determining the content, method, materials, and evaluation techniques for learning packages, he will write ______________________ objectives.

4. The first requirement of a valid objective is that it meet the criteria of a performance objective: "A behavioral or performance objective is a statement which describes aims or goals in terms of measurable or at least observable, terminal behavior of the student."

   For an objective to be valid, it must first conform to the definition of a performance objective by being written in terms of m__________________, t______________________, s_______________________, b______________________.

5. Test the validity of the following objectives on the basis of their being competency statements or performance objectives. Label them "competency (C)" or "performance (P)" in the space provided, keeping in mind the definitive requirements of a performance objective.

   a. ______________________ "The student applies his awareness of the importance of the democratic process to committee problem solving."

   b. ______________________ "The student employs the steps necessary to a motion as presented in Roberts' Rules of Order."

   c. ______________________ "The student will clean his brushes after every laboratory."

d. ____________________ "The student will develop good habits relating to his nutrition as evidenced by his selection of foods in the school cafeteria that provide for a well balanced diet."

e. ____________________ "The student will be able to use the facilities and services of the school library as evidenced by the footnote and bibliographic entries in his research-paper assignment.

Note: If the information presented in the beginning pages of this programmed lesson is not completely clear, or if you feel that you need additional training in recognizing performance objectives, you will benefit by referring to the first in the series of these programmed lessons, "Writing Performance Objectives for Instruction."

6. In addition to competency statements and performance objectives, a three-category taxonomy is used to classify the objectives.

   The three-level classification system used to specifically classify behavioral or performance objectives is called a ______________________________.

7. Three descriptive classifications called "domains" are used in the taxonomy of objectives.

   The taxonomy is divided into classifications of three types or______________.

8. The three domains of the taxonomy of objectives are the cognitive, the affective, and the psychomotor.

   The classifications of cognitive, affective, and psychomotor make up the objective taxonomy's ____________________________ domains.

9. The terminal behavior described as a goal for the student in a performance objective determines the domain classification for that objective.

   The domain classification for a performance objective is determined by the stated goal for the student's terminal _______________________.

10. The cognitive domain includes behavioral goals that describe how a person thinks--his concepts or his mental achievement relating to the acquisition and use of knowledge.

    Objectives that describe a student's achievement in the area of mental behavior related to the use of knowledge are classified in the taxonomy of educational objectives in the field of concepts or the _______________________ domain.

11. The affective domain covers those objectives that describe how a person feels and is used to classify measurable or observable achievements relating to values, attitudes, and appreciations.

    The classification that includes appreciations, values, and attitudes is known as the _____________________ domain.

12. Objectives that describe action or how a student does something are classified in the psychomotor domain. This is the domain sometimes referred to as the "skill" classification.

Objectives that describe an action or the development of a student skill are classed in the ____________________ domain.

13. Review the three domains, or areas, of the taxonomy for classifying objectives:

a. The ability to gain and use concepts is stated behaviorally in the cognitive domain.

b. The objectives for values and attitudes are stated behaviorally in the affective domain.

c. The goals for the student to develop skills are stated behaviorally in the psychomotor domain.

a. The cognitive domain includes behavioral objectives concerning ____________________.

b. The affective domain includes behavioral objectives concerning values and ____________________.

c. The psychomotor domain includes behavioral objectives concerning the development of ____________________.

14. Study this objective: "The student will be able to describe in writing the plot, the setting, and the main character in five of Mark Twain's literary works."

Because the ability to write this paper will depend on the student's understanding of certain concepts of knowledge, this objective is classified in the ____________________ domain.

15. Read carefully this objective: "The student will be able to construct a cedar chest, using only simple tools."

Since the ability to construct the chest will depend largely on the student's development of skills in using woodworking tools, this objective is classified in the ____________________ domain.

16. Now, how about this one? "The student will develop a high degree of self-confidence as evidenced by his willingness to at least attempt new and challenging projects."

Because self-confidence is an attitude, this objective is classified in the ____________________ domain.

17. While you are asked to classify objectives as being in a specific domain, it should be noted that in practice the three domains do not always appear in isolation. They often overlap within objectives and support each other in the teaching process.

In the space provided, classify the following objectives as being in either the "cognitive (C)", the "affective (A)", or the "psychomotor (P)" domain of our objective taxonomy.

a. ____________ "The student will be able to list the major copper-producing countries of the Western Hemisphere."

b. ____________ "The student will be able to paint a landscape employing proper techniques of either tempera painting or oil painting."

c. ____________ "The student will be able to evaluate his own written compositions using a teacher-prepared rating scale."

d. ____________ "The student will develop an appreciation of the value of promptness as evidenced by his fulfillment of obligations within the allotted time and by his attendance behavior."

e. ____________ "The student will be able to type seventy words per minute with a maximum of two mistakes when copying prepared material."

f. ____________ "The student will develop a sense of respect for the democratic process as evidenced by his participation in activities of of student government and in student elections."

g. ____________ "The student will be able to define orally and use in conversation the theatrical terms of the Greek and Roman eras."

Note: It is to be expected that some objectives will fall in a "grey" area and it will be difficult to classify them in one specific domain.

18. For review, consider these statements about the objectives stated in number 17.

Objectives a, c, and g state behavioral goals in the cognitive domain because listing nations, evaluating compositions, and defining and discussing terms all involve concepts or knowledge.

Objectives b and e state behavioral goals in the psychomotor domain because painting and typing both involve action or skills.

Objectives d and f state behavioral goals in the affective domain because the development of an appreciation and of a sense of respect both involve attitudes and values.

19. The understanding of the three categories of the taxonomy of instructional objectives is important to the validating of objectives. A variety of the different types should be included in the listed objectives for a teaching package.

Valid performance objectives for a package should include objectives that provide for a ____________________ of behavioral goals.

20. When writing performance objectives, we often unconsciously overemphasize one domain and de-emphasize the others.

Often objectives lack variety of behavioral goals because of a tendancy to unconsciously de-emphasize two of the domains and __________________ the other.

21. Too frequently when a list of performance objectives is studied, it is discovered that the cognitive domain has been given primary importance in determining behavioral goals for the students.

There is a tendency for performance objectives to lack variety because of an overemphasis of the ____________________ domain.

22. There is no intent to imply that the cognitive domain should not be used in writing objectives for instruction, or that objectives describing behaviors based on knowledge and concepts should be declared invalid.

However, objectives for a learning package should be examined carefully to determine if only one area or __________________ of student achievement has been considered.

23. The cognitive domain assumes added importance in writing and validating performance objectives if the six levels of objectives within the domain are considered.

The cognitive domain consists of __________________ levels of objectives.

24. The first, or lowest, level of objectives in the cognitive domain is limited to a knowledge orientation. Objectives written on this level relate to the student's ability to recall information.

The cognitive domain has at its lowest level objectives relating to the student's ability to ____________________ information and is ______________ -oriented.

25. The understanding of information and the ability to make use of materials are the objectives of the second level of the cognitive domain. This is known as the comprehension level.

The second level of the cognitive domain is the __________________ level and encompasses objectives directed at the student's ability to make use of materials and his _________________________ of information.

26. The next level of the cognitive domain is the application level. Objectives written on this level relate goals to the student's ability to see and apply abstrations.

The cognitive domain's third level is the ____________________ level and treats those objectives relating to the student's ability to see and apply __________________________.

27. Analysis is the next level in the cognitive domain. This level has objectives centered in the student's ability to study and understand segments of information or materials apart from the whole.

Objectives relating to the student's ability to isolate segments of information or materials come under the cognitive domain and are at the ______________________ level.

28. Synthesis refers to the act of pulling parts together in relationship to one another. Objectives relatin gto developing the student's ability to do this are in the fifth--the synthesis--level of the cognitive domain.

The level in the cognitive domain that includes objectives directed at the student's ability to pull information together and to determine relationships is known as the ____________________ level.

29. The highest level in the cognitive domain is evaluation. The instructional objectives written on this level call for development of the student's ability to make value judgments.

The highest level of the cognitive domain concerns the ability to make value judgments and is known as the ____________________level.

30. Look now at the six levels together to get them in their proper perspective. Fill in the blanks with the level of the cognitive domain called for. These are listed in reverse order, from the highest level to the lowest.

(6) ______________________ value judgments

(5) ______________________ pull together; establish relationships

(4) ______________________ take apart and study segments in depth

(3) ______________________ apply knowledge; see abstrations

(2) ______________________ understandings; make use of knowledge and materials

(1) ______________________ recall information

31. Classify the following objectives as being in the higher or lower level of the cognitive domain. The higher level includes objectives on the comprehension, application, analysis, synthesis, and evaluation levels. The lower level includes only those objectives on the knowledge level.

a. ____________________ "The student will be able to list the titles and authors of ten major works in Spanish literature."

b. ____________________ "The student will be able to utilize the necessary elements of blank verse poetry as evidenced in his writing of an original poem."

c. ____________________ "The student will be able to test the validity of listed performance objectives by using a list of six criteria."

d. ____________________ "The student will be able to state orally the definition of a performance objective."

e. ____________________ "The student will be able to determine and state the motivation of the authors of pamphlets published by the John Birch Society, the American Legion, and the Department of Agriculture."

32. In validating the performance objectives for a package, we should not demand nor expect objectives for each of the six levels of the cognitive domain. We should, however, be watchful that the higher level has been applied and that there is not overemphasis on the lower--knowledge--level.

Both in writing and in validating performance objectives, an important consideration is the inclusion of objectives in the cognitive domain that are on the ________________________ level.

33. The validity of an objective in terms of worth to the student is the final and most important evaluation criterion. Trivia should be avoided.

The most important consideration in testing the validity of a performance objective is its worth to the ______________________.

34. Presented below are the criteria to employ in validating performance objectives for instruction. Study them carefully.

a. Are they written in terms of what the student will do? (behavior)

b. Do they indicate terminal goals for the student?

c. Are they stated in terms of student behaviors that can be measured, or at least observed?

d. Do the objectives reflect a variety of desired behaviors in the cognitive, affective, and psychomotor domains.

e. Do the cognitive-domain objectives reflect behavioral goals on the higher level, not just knowledge recall?

f. Are the objectives valid in terms of worth to the student?

35. On the following page, space has been provided to allow you to practice writing valid performance objectives for instruction. Follow these directions:

a. Write objectives for your own subject matter field or area of responsibility.

b. Write one competency statement to give you direction and guidelines.

c. Write four performance objectives to go with the competency statement.

(1) Write one objective for each of the three domains.

(2) Include two objectives in the cognitive domain, one of which is at the higher level.

d. Test the validity of your objectives by applying the six criteria presented in number 34.

Note: Refer back to any portion of this lesson that you wish, both as you write objectives for practice and as you validate them.

OBJECTIVE WRITING
PRACTICE SHEET

Subject Matter Field or Area of Responsibility: ____________________

Competency Statement: ____________________

____

____

____

____

Performance Objectives:

Cognitive Lower: ____________________

____

____

____

Cognitive Higher: ____________________

____

____

____

Psychomotor: ____________________

____

____

____

Affective: ____________________

____

____

____

Now mentally test the validity of your objectives by applying the six criteria presented in number 34.

APPENDIX E

FIVE STAFF EXERCISES ON DEVELOPING PERFORMANCE OBJECTIVES

EXERCISE #1

Directions

1. From EXERCISE #5, which will be distributed by one of your workshop leaders, choose one of the competency statements and write in your own words how you would communicate to the student precisely what he is to learn, and how the student would be evaluated. Use the space below for your response.

2. After completion of this task, your workshop leaders will summarize the participants results.

3. When the results are summarized, then rewrite your communication device using the methodology suggested by the workshop leaders and the information received during the summarizing process.

4. Review one again your communication device, then retain your results for Exercise #2.

EXERCISE #2

Directions for Information Packet #2

1. Review the information contained in the Pre Assessment For Validating Performance Objectives For Instruction. If you have any questions consult one of your workshop leaders.

2. Review from this handout, the basic definition of a performance objective.

3. Review also the three-level classification system that may be used to specifically classify performance objectives.

4. In the space provided below, write in your own words, the definition of a performance objective.

Definition:

EXERCISE #3

Directions

1. Using your results from Exercise #1 and what you have learned in Exercise #2, rewrite your communication device (performance objective) in terms of the following:

   a. What the student will do? (behavior or performance)

   b. Circumstances under which the performance is to take place or conditions.

   c. What degree of accuracy or standard.

Write your completed objective on the following page.

2. After you have rewritten the performance objective, your workshop leaders will discuss with you the type of objective you have written and the level of the objective.

3. Retain this objective, its classification and its level for Exercise #4.

EXERCISE #4

Directions

1. Read the performance objective written in Exercise #3. Ask yourself the question, "What must the student know prior to being able to accomplish the specified behavior?"

2. Make a simple list of those knowledges, skills or concepts, that you feel are necessary for the student to learn prior to him/her being able to demonstrate the behavior or performance in the performance objective.

3. Have one of your workshop leaders discuss your results with you.

4. Your workshop leaders will distribute a handout which will define a classification system for categorizing objectives and levels within each category.

5. The workshop leaders will discuss this taxonomy with the total group and you will have the opportunity to ask any question you may have concerning the system.

EXERCISE #5

Directions

1. Referring to question 35 in Information Packet #2, choose competency statements in which you can write objectives in all three domains.

2. Following the directions in question 35, write performance objectives as indicated.

3. When you have completed this exercise have one of the workshop leaders check your work using the performance objective checklist.

4. Retain this information for later exercises.

APPENDIX F

SAMPLES

(1) GUIDELINES FOR DEVELOPING PERFORMANCE OBJECTIVES

(2) PERFORMANCE OBJECTIVE CHECKLIST

Sample

Guidelines For Developing Performance Objectives

GUIDELINES FOR DEVELOPING PERFORMANCE OBJECTIVES

A performance objective will consist of three components: (1) performance statement, (2) conditions and/or limitations (3) criteria of acceptance.

Performance Statement:

The Performance Statement states concisely what observable behavior the student must exhibit as a result of performing some specific cognitive, psychomotor, or affective operation. The Performance Statement must express explicitly what the student must do, how he is to do it, and what the result is to be in terms of observable behavior (overt behavior).

Conditions and/or Limitations:

This component of the objective states specifically the conditions and/or limitations which affect the student's performance in attaining the terminal behavior specified in the Performance Statement. Factors which affect the student's performance include the following:

1. The time limit allowed to complete performance of the task
2. The location where work will be performed
3. Which references, aids, or materials may be used in performing the task
4. Which equipment, tools, and supplies may be used in performing the task
5. Other limitations unique to the cluster or area of concern which affect the student's performance

Criteria of Acceptance:

This component of the objective states the minimum acceptable level of performance by the student and specifies the standard by which this performance is to be judged. Where applicable, the following elements will be included into the criteria of acceptance

1. Time will be stated, if time is a factor. Example: The student will type at a minimum rate of 40 words per minute.
2. The number or percentage of total test items or responses which must be answered correctly to complete the objective
3. The actual responses that will be considered acceptable
4. The criteria which will be used as a standard to judge the student's performance, and who will use the criteria to evaluate the student's performance

Sample

Performance Objective Checklist

PERFORMANCE OBJECTIVE CHECKLIST

Some instrument which can be used to assess a performance objective is needed to assure that each objective contains the necessary components. The checklist that follows, rudimentary as it is, can fill some of the needs of evaluation. Using this checklist will result in a close examination of the component structure of a performance objective. It will indicate basic errors in construction and identify defects or inconsistencies in how the objectives are written.

The checklist format provides for a comparison of competency skill requirements and the skill demanded by the performance objective. In addition, it requires verification that each major aspect of the components are present or, if appropriate, excluded. Those aspects requiring further specification or other modification should be clarified in the explanation section.

PERFORMANCE OBJECTIVE CHECKLIST

Course: ______________________ Module No. ____________

Content Person: ______________________ Objective No. ____________

Directions:

This checklist is to be completed for each objective which is developed by a conference participant. After you have checked your performance objective, submit the completed checklist to a member of your group. That member will review the objective and return the checklist to you with the objective with appropriate comments.

	Yes	No	N/A
Performance Statement: All Performance Statements should: 1. State what task the student must perform.			
2. State the behavior in the standard terminology of the career area.			
Conditions and/or Limitations: All Conditions and/or Limitations should: 1. State the time allowed to complete the task.			
2. State references which may or may not be used.			
The following elements *may* be contained in the Conditions and/or Limitations to help clarify the objective: 1. States specific equipment or classification of equipment which may or may not be used. (All objectives requiring psychomotor skills should contain this element; cognitive/affective *may* include this element.)			
2. States if the student will be given a sample assignment or exercise sheet.			
3. States if and when the student will be given a performance or product evaluation scale.			

	Yes	No	N/A
4. States other limitations unique to the cluster or task.			
5. States conditions or limitations located elsewhere (prior objectives, modules, Student Learning Plans, or supportive material).			
6. States location of performance. (Must be included if task is to be performed in location other than regularly assigned cluster areas. May be included for those tasks to be performed in regularly assigned cluster areas.)			
Criteria of Acceptance: All Criteria of Acceptance sections must: 1. Be congruent with Performance Statement and Conditions and/or Limitations.			
2. State the standard for judging the behavior (list of criteria, chapter or page of an authoritative source, instructor checklist, etc.).			
The following elements may be contained in the Criteria of Acceptance to help clarify the objective: 1. States the number or range of numbers of total responses required. (Applies primarily to cognitive objectives.)			
2. States the percentage of total responses that must be answered correctly. (Applies primarily to cognitive objectives.)			
3. States who will judge or evaluate the performance. (Must be included in all objectives requiring more than the use of an answer key for assessment.)			

Explain in detail:

____

____

____

____

Competency Statement:

PERFORMANCE OBJECTIVE

Performance Statement:

Conditions and/or Limitations:

Criteria of Acceptance:

Program: ____________________

Author: ____________________

APPENDIX G

CLASSIFYING PERFORMANCE OBJECTIVES

CLASSIFYING PERFORMANCE OBJECTIVES

In writing performance objectives or behavioral objectives for accountability, considerable care must be taken to describe as clearly and as precisely as possible the actual acceptable student behaviors. These behaviors should be closely related to the competency statement as these reflect acceptable and desirable behavior in the world of work. In many cases, acceptable student behaviors have to be modified and/or limited by school instructional resources. Therefore, precautions must be taken to ensure that the student behaviors adequately reflect the world of work behavior levels of generality and abstraction within the three domains - cognitive, affective, and psychomotor. Identification of performance objectives and competencies by use of a classification code is used to precisely communicate the desired behavior and provide for analysis of compatability between competency statements and student behaviors.

The classification code is parallel to the well-known domains of instructional objectives and is described as thought skills (cognitive), physical skills (psychomotor), and attitude skills (affective). An added value of this classification is that the code for each skill indicates rank order so that each behavioral objective can be easily rated according to the level of skill it requires.

Thought (T) skills are generally expressed verbally, although these skills can be expressed in some physical way and are greatly affected by attitudes. Physical skills (P) are overt acts and are quite often easily measured. Usually the results of physical skill performance are the product of some thought and appropriate attitude as well. Attitude skills (A) are associated with a mental state in preparation for the thought or physical actions to follow. Thus, it can be seen that a performance objective may be comprised of skills within all domains. When a behavior involves two or more skills, the explanation of characteristics for each should be used in writing the objective.

The initial step in employing these skill codes is to analyze the competency statement characteristics upon which the performance objective is to be based and establish its skill levels and rating. The behavioral objective is then constructed incorporating behavior characteristics appropriate for the skill levels of the competency. Thus, the skill levels and rating called for in the behavioral objective will be as close to those of the competency as the school situation permits.

Thought Skills

Cognitive Domain	Typical Actions	Behavior Characteristics	Code	Explanation of Characteristics in Objectives
Evaluation	Compare	Employing concepts and principles, solves symbolic problems with general techniques	T-6	Describes a global problem requiring the use of a number of concepts and principles in its solution; states a general technique for solving the problem.
Synthesis	Rearrange Categorize Design	Solving by arranging or designing	T-5	Gives the problem to be solved and the design or arrangement that is acceptable when evaluated by an expert.
Analysis	Breakdown Discriminate Select	Solving by sorting parts or selecting out significant elements	T-4	States a specific problem the student is to solve and gives the acceptable answer with authority when possible.
Application	Change Compute Solve	Respond by computing and changing	T-3	Gives the statements to which the student is to respond and appropriate answers or refers to the expert who is to evaluate the response.
Comprehension	Distinguish Explain	Explain the process; state a proper sequence	T-2	States what must be written in an explanation or a step-by-step procedure.
Knowledge	Define Name	Recall a fact or a name; list elements	T-1	States exactly what is to be recalled from previo memorized facts or experiences.

Physical Skills

Psychomotor Domain	Typical Actions	Behavior Characteristics	Code	Explanation of Characteristics in Objectives
Complex overt response	Automatic Unhesitating	Determine quality; show internalized standards	P-5	Requires the use of internalized standards to mak quality judgments. The quality aspects should be described in terms understood by experts.

Psychomotor Domain	Typical Actions	Behavior Characteristics	Code	Explanation of Characteristics in Objectives
Mechanism	Habitual Patterned	Perform physical skills in problem-solving situation	P-4	Requires a complex skilled performance upon something with exacting use of instruments and devices under precise rigorous conditions.
Guided response	Imitating Trial and error	Perform skilled physical acts	P-3	States the level of skill required to be demonstrated and specifies the instruction the student will follow.
Set	Prepared Ready	Perform sample physical acts	P-2	States a specific situation the student is to act upon; the specific response act that will satisfy it; and the specific instruments permitted to be used.
Perception	Aware Choose Sense	Identify by pointing; ignore; feel	P-1	States clearly what the student is expected to select from among what things and by what method (limitations).

Attitude Skills

Affective Domain	Typical Actions	Behavior Characteristics	Code	Explanation of Characteristics in Objectives
Characterize	Respect Integrate Internalize	Response totally integrated; philosophy	A-5	States situations requiring global responses; good worker, safe worker, etc. as judged by an expert.
Organized	Committed Judged	Make judgments; communicate values	A-4	States a given situation to which a variety of responses will be acceptable, each depending on judgment and value. Unacceptable types of responses are noted in criteria.
Value	Prefer Certain	Consistently gives one single response	A-3	Specifies the conditions, gives the student detailed instructions, and requires repetitive responses

Domain	Actions	Characteristics	Code	Explanation of Characteristics in Objectives
Respond	Participate Obey Comply	Reacts as expected (appropriate)	A-2	States the situation to be reacted to and the acceptable reactions. These reactions may be physical or both physical and verbal.
Receive	Aware Listen Attentive	Passively attends to the stimuli	A-1	Requires the student to recognize consequences and be able to express time verbally

APPENDIX H

TENTATIVE FORMAT FOR INSTRUCTIONAL MATERIALS

(1) A SAMPLE FORMAT FOR WRITING

(2) DEFINITIONS OF FORMAT HEADINGS

A SAMPLE FORMAT FOR WRITING

CAREER DEVELOPMENT CENTER #1
DIVISION OF CAREER DEVELOPMENT PROGRAMS
D.C. PUBLIC SCHOOLS
WASHINGTON, D.C.

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Learning Package (No.): (Title)

Course: (Title)

Cluster: (Title)

Learning Package (No.) - pg. 2 of 4 Objective (No.)

Course: (Title)

Learning Package: (Title)

Prerequisites:

Rationale:

- - - - - - - - - - - - - - - -(Separate Page)- - - - - - - - - - - - - - -

Learning Package (No.) - pg. 3 of 4 Objective (No.)

Competency Statement:

TERMINAL PERFORMANCE OBJECTIVE

Performance Statement:
Upon completion of this learning package you will be able to....

Conditions/Limitations:

Criteria of Acceptance:

Pre-Test:

If after reviewing this learning package you think you have the capability to perform the terminal performance objective, ask your instructor for a pre-test.

Enabling Performance Objectives:

To achieve the terminal performance objective for this package you should be able to:

1.
2.
.
.
.
.
n.

Learning Activities:

Enrichment Activities:

Post-Test:

When you are ready to demonstrate the performance described in the terminal objective, ask your instructor for the post-test.

Definitions of Format Headings

Course (Title): title of the course.

Learning Package (Title): a general and brief descriptor of the content of the learning package.

Prerequisites: state the entry-level requirements for the student to begin the learning package.

Rationale: states the justification for learning the content of the learning package--its relevance and purpose.

Competency Statement: a precise description of a work activity in terms of the basic skills, attitudes, and knowledge necessary for competent performance of that activity in an occupational area. Collectively, competency statements for an occupational area represent the basic skills, attitudes, and knowledge necessary for career success.

Terminal Performance Objective: an unambiguous description of a particular overt behavior(s) that is to be demonstrated by the student after completing a learning package, including the conditions and/or limitations imposed on the student and the criteria by which the demonstrated behavior will be accepted.

Pre-Test: (The role and function of pretests have not been finalized at the present time. Consensus seems to be that the pretest will be diagnostic and used for assessing the student's prior knowledge or behavioral capability in terms of the terminal and enabling performance objectives.)

Enabling Performance Objectives: a brief but general description of each discrete behavior that must be learned in order for the student to attain a terminal performance objective. However, student behaviors required in prerequisite terminal performance objectives are generally not restated as enabling behaviors in subsequent objectives.

Learning Activities: a series of activities designed to lead the student to the attainment of each enabling performance objective, and consequently, to the attainment of the terminal performance objective. These activities should allow for various alternatives in instructional methodology and for differences in learner characteristics.

Enrichment Activities: additional, optional learning activities designed to (1) supplement an area of study by strengthening or reinforcing the student's ability to attain the terminal performance objective, or (2) provide the student with challenging experiences that may lead him to pursue an area of interest.

Post-Test: a procedural instruction to the student to remind him to request a post-test situation when he completes the learning package and is ready to be assessed. (Post-Test Situation: a diagnostic test situation instituted by the instructor and used for assessing whether or not the student has successfully attained the behavior described in the terminal performance objective.)

APPENDIX I

FOUR EXEMPLARY LEARNING PACKAGES

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Learning Package 01: Kitchen Design

Course: Architectural Drafting

Cluster: Communications & Media

Course: Architectural Drafting

Learning Package: Kitchen Design

Prerequisites:

Must have completed work on fixtures, sizes, and layouts as well as electrical and plumbing symbols.

Rationale:

The contractor is concerned with the individual areas of a building as well as with the whole building. The kitchen contains more separate fixtures than any other area of the house and they are of particular concern to the contractor, especially for bidding purposes. It is extremely important to design and show all of these fixtures for the prospective owner's benefit. A kitchen can "sell" a house. It's one of its most important features. You may even have a chance to sell your plan to a customer. After completing this material you will have a better insight into the area of design as it affects the total building.

Competency Statement:
Designs kitchens in relationship to the whole house.

TERMINAL PERFORMANCE OBJECTIVE

Performance Statement:

Upon completion of this learning package you will be able to design a kitchen in relationship to the whole house.

Conditions/Limitations:

The kitchen will be oriented on two exterior walls and is to serve a family of five. The use of architectural magazines, graphic standards, and other reference materials supplied by the instructor will be permitted. The design should be executed to scale on your board.

Criteria of Acceptance:

The design will be evaluated by your classmates and instructor on the following:

1. Accuracy of scale.
2. Functional and nonfunctional aspects.
3. Its relationship to other room areas.
4. Location of fixtures and equipment.
5. Relationship of the design to others in terms of architectural language.
6. Skill in the use of templates, schedules, and instruments.

Pre-Test

If after reviewing this learning package you think you have the capability to perform the terminal performance objective, ask your instructor for a pre-test.

Enabling Performance Objectives:

To achieve the terminal performance objective for this package you should be able to:

1. Know the various styles of kitchen layouts.
2. Identify all of the features of any "style" of kitchen layout.
3. Lay out a kitchen in any one of the given styles.

Learning Activities:

1. Review various styles of kitchen layouts from pages ___ to ___ (assigned text). In reviewing look for the following in each style:
    a. Size of area
    b. Convenience patterns (work space)
    c. Traffic patterns
    d. Orientation
    e. Required equipment
    f. Built-ins

2. Study samples of kitchen layouts from architectural magazines with special emphasis on items 1-6 in activity one.

3. Make a poster showing an example of (pictures from magazines) each style of a kitchen.

4. Draw a kitchen layout using one of the styles you have learned.

5. The class members and instructor will conduct a critique session on each drawing, looking for:

    a. spatial relationship
    b. use of space
    c. layout of equipment
    d. traffic patterns

6. Using the given specifications of a five-member family and a 1/4" scale, design your own plan of a kitchen.

7. When you undertake the terminal performance objective, class members and instructors will act as owners and contractors in a critique session of your plan. Re-read the terminal objective. You may want to perform the enrichment activities listed below before proceeding to the post-test.

Enrichment Activities:

1. Design a kitchen with a center floor arrangement off the major work area.
2. Design a kitchen with a breakfast nook included.
3. Draw a plan showing how you would remodel your own kitchen.

Post-Test:

When you are ready to demonstrate the performance described in the terminal objective, ask your instructor for the post-test.

Pre-Test

1. What is the most common scale used in laying out residential floor plans?
2. What is the use of a template?
3. How is Architectural Graphics Standards used in layout?
4. What is orientation?
5. In what area of the plan is the kitchen located?
6. Are there special outlets in a kitchen? List them.
7. For whom is it necessary to give brand names of equipment?
8. What could be the most nonfunctional aspect in equipment location?
9. What are the most important factors to be considered in a design?
10. How important is the kitchen to the overall design area of the house?

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Learning Package 01: Color in Posters

Course: Advertising Art

Cluster: Communications and Media

Course: Advertising Art

Learning Package: Color in Posters

Prerequisites:

Must have completed basic design unit; must also have completed unit on hand lettering.

Rationale:

Because the advertising artist is involved in the art of visual persuasion, it is important that we investigate the role color plays in our craft. Certain stimulants, of which color is one, act to affect the receiver. The poster is one of the more common means of communication and must attract attention to inform and/or persuade. Upon completion of this module, you will be capable of utilizing colors to effect the desired reaction from your audience.

Competency Statement:

Coordinates color to set tone of advertisements.

TERMINAL PERFORMANCE OBJECTIVE

Performance Statement:

Upon completion of this learning package you will be able to utilize colors in designing posters that serve as stimuli in acheiving desired audience response due to their visual appeal.

Conditions/Limitations:

Given a blank color wheel, paint (tempera or watercolor) or markers (wide tip), lettering and paint brushes, mixing pan, water cups, blotter, white paper and 18 x 24 poster board, copy, and desired audience response. A time period of five days is allotted. Reference allowed: pages 150-177 in Commercial Art, by Wallace.

Criteria of Acceptance:

1. Assignments must be completed on time.
2. Three posters designed and completed.
3. All posters must meet the following criteria:
    a. neatness-no pencil smears, no pencil marks
    b. principles of design followed
    c. control of mediums
    d. borders visible
4. Instructor and at least 2 other students judge that all three copy messages are relayed by color.

Pre-Test:

If after reviewing this learning package you think you have the capability to perform the terminal performance objective, ask your instructor for a pre-test.

Enabling Performance Objectives:

To achieve the terminal performance objective for this package you should be able to:

1. Identify the visual effects of different colors in writing.
2. Identify the visual effects of different colors verbally.
3. Compare and contrast these effects.
4. Apply craftsmanship rules.
5. Interpret the color wheel.

Learning Activities:

1. Read written handout "Color and the Poster." After reading, stop for class discussion.

2. Create a color wheel following the following procedure: (Use your pigments--water colors or tempera.)

   a. Make washes of each of the three primary colors. The washes should be full strength and brilliant. Place them in the largest circles on the color wheel with yellow at the top.
   b. Mix yellow and blue to make normal green; mix yellow and red to make orange; and mix blue and red to make violet. The mixtures made from the primaries may not be as brilliant as desired. This depends on the quality of colors used. If the mixtures are not satisfactory, the three washes may be made directly from the tubes of secondary colors. An attempt should be made, however, to make the entire wheel from the primary colors.
   c. Mix yellow and blue--more yellow then blue--to make yellow-green. Then add more blue to make blue-green. In the same manner, mix yellow-orange, red-orange, red-violet and blue-violet. Place these washes in the proper places in the color wheel. The small circles are used to designate hues.
   d. Mix any two opposite colors - complementary colors to produce neutral gray.

3. Paint a rectangular form such as a box using contrasting colors. Use a light color such as yellow or orange for the top and light side , and the complementary color for the shaded side. This illustrates the principle that the shadow of a warm color may be seen as the complementary color.

4. Prepare at least 4 thumbnail sketches for the following poster:

   COPY - "Spend Your Vacation in Bermuda". Upon completion turn them in to the instructor for counseling.

5. Prepare a rough of the sketch you choose to use. Check with instructor.

6. Prepare your comprehensive using the following specifications:

   medium: choice of tempera or watercolor.
   18 x 24 poster board

7. Prepare at least 4 thumbnail shetches for the following poster:

   COPY - "Enjoy Your Winter Break in Sun Valley, The Winter Wonderland"
   Check with the instructor when completed.

8. Repeat steps 5 and 6; turn in to the instructor.

9. Prepare at least 4 thumbnail sketches for the following poster:

   COPY - "Grand Opening - Super Bad & Funky Sweat Shirt Shoppe"
   Check with the instructor when completed.

10. Repeat steps 5 and 6; turn in to the instructor.

Re-read the terminal objective. You may want to perform the enrichment activities listed below before proceeding to the post-test.

Enrichment Activities:

1. Create 2 posters:

   subject--"Bowl of Soup";
   copy--your own choice.

2. Prepare one poster using contrasting colors and one using complementary colors to paint the design. Strive for bold, pleasing designs.

Post-Test:

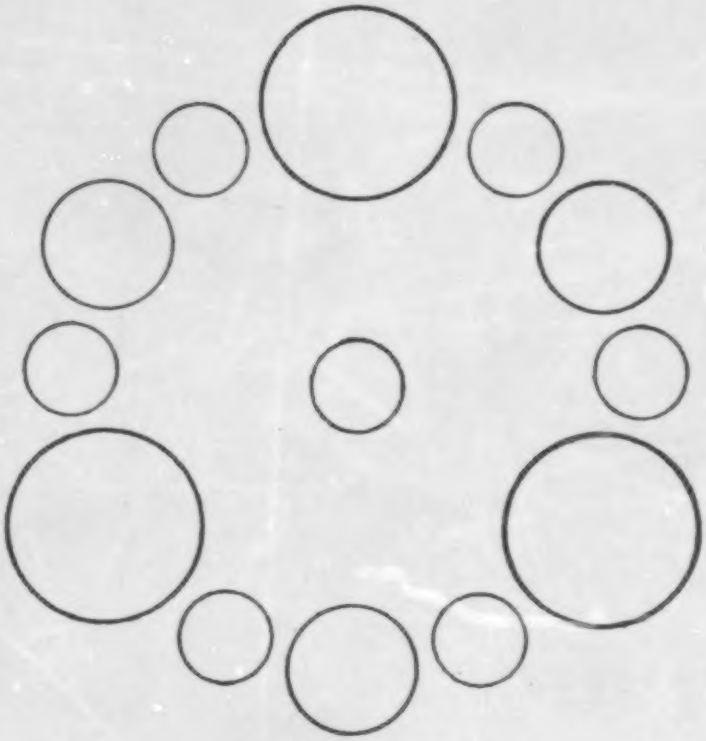
When you are ready to demonstrate the performance described in the terminal objective, ask your instructor for the post-test.

Learning Package 01 Objective 01

Pre-Test:

1. What are the primary colors?
2. What are the secondary colors?
3. What are the tertiary colors?
4. What is a hue?
5. What are the warm colors?
6. What are the cool colors?
7. Blue complements ______________?
8. Red complements ______________?
9. Yellow complements ______________?
10. Designate the proper place for the colors on the following color wheel.

COLOR WHEEL



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Learning Package 01: Incident Light Meter

Course: Filmmaking

Cluster: Communications and Media

Course: Filmmaking

Learning Package: Incident Light Meter

Prerequisites:
None

Rationale:

As we have seen earlier, filmmaking, and especially cinematography, are to a great extent painting with light. But a camera is really just a machine, and film is just chemicals on a strip of plastic. The film and camera can't make judgments by themselves. The cameraman and gaffer work together to create the best lighting for the scene. But to set the camera to receive the light, the light must be measured with high accuracy. If the light is measured incorrectly, the camera will be set incorrectly, and the film will be overexposed or underexposed. This can be an extremely expensive mistake, requiring thousands of dollars to reshoot a scene.

An incident light meter is the instrument used by most filmmakers to measure light. Anyone involved in the shooting of film needs to be able to operate one. Once you can do this, you'll be ready for lighting design and shooting film.

Competency Statement:
Operates incident light meter to measure light.

TERMINAL PERFORMANCE OBJECTIVE

Performance Statement:

At the conclusion of this packet you will be able to operate an incident light meter to measure light and choose the correct f-stop for the camera lens.

Conditions/Limitations:

1. Incident light meter will be provided.
2. Activities will take place both indoors and outdoors.
3. Camera position will be indicated for each exercise.
4. Diagram of light meter with labeled parts will be provided along with instructions for operation. Sample film packages will also be provided.

Criteria of Acceptance:

Upon completion of this package you will demonstrate (1) the operation of an incident light meter with 100% accuracy in both indoor and outdoor lighting conditions, and (2) the ability to select the correct f-stop for all available camera speeds.

Pre-Test

If you already know how to do this, see the instructor.

Enabling Performance Objectives:

1. Sets ASA correctly.
2. Locates light source and camera position.
3. Holds light meter in correct position.
4. Reads scales correctly.
5. Aligns scales correctly.
6. Locates camera speed on correct scale.
7. Identifies correct f-stop for indicated camera speed.

Learning Activities:

1. Examine the diagram of the light meter and compare it to the light meter itself. Notice the parts of the meter that move. The inner wheel moves so that you can set the ASA or film speed. The outer wheel will help you find the f stop. The white dome swivels so that you can point it in any direction. The button in the center controls the movement of the needle. When the button is depressed the needle is free to move. When it is released, the needle locks in position. Notice the removable slide in the back of the meter and the slot at the top of the meter where it may go.

2. Every type of film that you use has its own "film speed" or sensitivity to light. This is called the ASA of that film. The higher the ASA, the more sensitive that film is to light. Find the ASA number on sample boxes of film.

3. Observe an instructor demonstration on the operation of the light meter.

4. Set ASA at 125. Pretend the camera is at the door to the room. Go to a corner of the room and take a reading. Using the techniques you have learned from the demonstration, find the correct f stop for a camera speed of 24 FPS. Write it down here. ____________. Change the ASA to 400 and repeat the exercise. Put down this f stop here. ____________. Which f stop is higher? ____________. Which lens opening is wider? ____________. Check with the instructor.

5. Set ASA at 125. Go outside the front door. Pretend that the camera is at the door and shooting a scene at a car across the street. Take a reading. Is the needle off scale? If so, use the slide to correct it and remember to align the scale at red "H" on the meter, not at white "L". Determine the correct f stop at a camera speed of 24 FPS. ____________.

CHECK LIST: Are you standing at subject, not camera position?
Is white bulb on meter facing camera position?
Are you casting a shadow on the meter?
Did you depress the button for one second, then release it?
Did you align the scales carefully?
Did you find the f stop under 24 FPS?

While you are outside, pretend that the camera is on the opposite side of the car. Repeat above procedure. f stop ____________.

What is the correct f stop if the camera is set at 64 FPS? _________. 8 FPS? ____________. Check with the instructor.

Enrichment Activities:

Invent some of your own.

Post-Test:

Are you confident in your ability to use an incident light meter? If so, go to the instructor for your post-test. If not, repeat exercises 4 and 5 and invent some of your own!

Now go to Post-Test.

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Learning Package 01: Process Cameras (B&W)

Course: Printing

Cluster: Communications and Media

Course: Printing

Learning Package: Process Cameras (B&W)

Prerequisites:

None

Rationale:

There are many opportunities available to the people in this generation who are interested in printing. Many high-level technical positions are opening up. There are ways to guide yourself into positions of this kind. There are also positions available that lead to this high level. One of these is an offset cameraman.

There is a great demand for good offset cameramen. A little thought and desire could put you into this position. Not only is this an immediate vocational opportunity, it can lead to higher professional opportunities, such as manager of a print shop or a production and planning job in government or private industry.

Accuracy and good perception are "must" qualifications for you to have if you are to be a good cameraman. This package attempts to relate the finer points to you so you can have these qualifications.

Competency Statement:

Operates a process camera to photograph copy.

TERMINAL PERFORMANCE OBJECTIVE

Performance Statement:

Upon completion of this learning package you will be able to operate the process camera to photograph camera copy.

Conditions/Limitations:

Given: a horizontal or vertical process camera.

Criteria of Acceptance:

The resulting negative must match the camera copy in sharpness and clarity.

Pre-Test

If after reviewing this learning package you think you have the capability to perform the terminal performance objective, ask your instructor for a pre-test.

Enabling Performance Objectives:

1. Position copy on copyboard.
2. Set copyboard scale.
3. Set lensboard scale Same size - 100%
4. Set aperture opening.
5. Position/focus on ground glass.
6. Adjust film on vacuum board.
7. Operate the timer.

Learning Activities:

1. Observe demonstration by instructor. Review handouts given to you by instructor on positioning copy on copyboard. Position given copy on copyboard. Study *your* positioning in comparison to handout positioning for accuracy, then let instructor compare both positionings.

2, 3, 4. Set aperture opening, lensboard scale, and copyboard scale on camera. Read pages 100-102 of classroom text about the group settings; compare your settings with settings in illustrations for same size to see if they are accurate.

5. Check on ground glass for vertical and horizontal alignment *within* vertical and horizontal scales etched on the ground glass. Let upper classmen check for positioning.

6. Demonstrate to instructor proper way of handling film according to page 110 of classroom text.

7. After several demonstrations and reviews involving the text and handouts on proper operation of the timer, re-read the terminal objective. You may want to perform the enrichment activities listed below before proceeding to the post-test.

Enrichment Activity:

Study given material! You will notice it is divided into four sections. Your job is to photograph Section 2 without photographing Sections 1, 3, or 4.

1. Later!	2. Goodbye
3. So Long	4. See Ya!

Post-Test:

When you are ready to demonstrate the performance described in the terminal objective, ask your instructor for the post-test.

Pre/Post Test

1. The copy should be placed on the copyboard:

    a. Left-to-right reading
    b. Upside down reading
    c. Right side up reading
    d. Right-to-left reading

2. Same size reading is:

    a. 50%
    b. Twice original size of copy
    c. 100%
    d. Two-color photography

3. Ground glass is:

    a. A powdery substance
    b. A glass from the earth
    c. A device used to help focus
    d. A glass with an initial on it

4. A vacuum board is:

    a. Used to clean darkroom
    b. Made of glass
    c. Holds film to be photographed
    d. Holds the lights on the camera

5. The timer device is:

    a. Always stored in the drawer of the instructor's desk
    b. Controls the cutting off and cutting on of the camera lights
    c. Versatile enough to be used without the camera
    d. Unbreakable

APPENDIX J

PHASE II ASSESSMENT

PHASE II ASSESSMENT

DIVISION OF CAREER DEVELOPMENT PROGRAMS

PUBLIC SCHOOLS OF THE DISTRICT OF COLUMBIA

DIRECTIONS

The following questions are designed to provide you and the workshop staff with an honest appraisal of the following:

- Your opinion of what you have gained from the activities conducted during the workshop
- Your opinion of selected activities conducted during the workshop and
- Recommendations you have for further staff development activities relating to curriculum development for the Career Development Center

Read each of the questions and check whether you agree or disagree.

1. The workshop, as a total, was adequate to provide me with the needed information on how to develop curricular materials to be used in my classes.

   8 Agree 𝍸III 2 Disagree II

2. The workshop activities were well planned and followed a logical sequence which allowed me the opportunity to learn the curriculum development techniques more easily.

   8 Agree 𝍸III 2 Disagree II

3. The activities allowed me the opportunity to practice and apply the concepts and techniques in my area of interest.

   8 Agree 𝍸III 1 Disagree I 1 Omit I

4. There were too many workshop staff-directed activities presented in a lecture mode which could have been written into handouts or similar means of communication.

   0 Agree ____ 9 Disagree 𝍸IIII 1 Omit I

5. It would have been helpful if the participants could have known more about the general nature of learning modules and their uses early in the workshop such as examples of modules and a general explanation of how they might be utilized in the classroom.

   8 Agree 𝍸III 2 Disagree II

6. The terminology used by the workshop staff was at a level that it was impossible for me to understand.

1 Agree | 8 Disagree 𝍸||| 1 Omit |

7. It would have been helpful if more time had been allowed for each activity conducted during the workshop.

5 Agree 𝍸 5 Disagree 𝍸

8. As a result of the workshop, I feel more confident about developing curricular materials for use in my class.

10 Agree 𝍸𝍸 0 Disagree _____

9. I feel confident that I have the skills to derive competencies in my area of expertise.

9 Agree 𝍸|||| 1 Disagree |

10. I feel that I have the ability to write both terminal performance objectives and enabling performance objectives.

7 Agree 𝍸|| 2 Disagree || 1 Omit |

11. It would have been helpful if more time had been allotted to the derivation of performance objectives during the workshop.

4 Agree |||| 5 Disagree 𝍸 1 Omit |

12. I feel that I have the necessary information and competence to write learning modules without the aid of curriculum personnel.

1 Agree | 9 Disagree 𝍸||||

13. The workshop has provided the opportunity for me to express my opinions openly and freely.

10 Agree 𝍸𝍸 0 Disagree _____

14. It would be helpful for me to have assistance in preparing the written curricular materials (Modules) for my class.

9 Agree 𝍸|||| 0 Disagree _____ 1 Omit |

15. I feel the workshop has been worthwhile and has provided me the opportunity to grow professionally.

10 Agree 𝍸𝍸 0 Disagree _____

16. When it was impossible for me to attend all workshop sessions, the staff made every attempt to help me learn the materials and exercises I missed.

6 Agree ~~||||~~ | 1 Disagree | 2 N/A (Omit |

17. I feel it would be helpful if the staff development workshop would continue prior to the opening of the Center.

9 Agree ~~||||~~ |||| 1 Disagree |

18. Without help to write the learning modules, I do not see how it would be possible for me to carry on my regular teaching load and develop curriculum at the same time.

8 Agree ~~||||~~ ||| 2 Disagree ||

19. I feel too much material was covered during the workshop and it did not allow me the adequate time to understand the principles and concepts presented.

4 Agree |||| 6 Disagree ~~||||~~ |

20. I would have liked the opportunity to participate in more "participant centered" activities such as deriving competencies, objectives and learning activities.

7 Agree ~~||||~~ || 2 Disagree || 1 Omit |

21. The handout materials used during the workshop were adequate for me to use in the written exercises.

8 Agree ~~||||~~ ||| 2 Disagree ||

22. The workshop staff made every attempt to answer my questions when they arose.

10 Agree ~~||||~~ ~~||||~~ 0 Disagree ____

23. The workshop staff provided me the opportunity to present my work to the group and to furnish constructive criticism.

10 Agree ~~||||~~ ~~||||~~ 0 Disagree ____

24. I feel that I did my very best throughout the workshop.

8 Agree ~~||||~~ ||| 2 Disagree ||

25. Explain in your own words any areas of concern you have regarding the workshop, its conduct and what do you see as your need in the next phase of staff development.

Response: (Number of respondents is shown in left margin)

6 (A) Need another workshop(s)--(1) on operation of tools and equipment that will be used; (2) on deriving set forms of evaluation for artisans; (3) on preparing learning modules; (4) only if the Center is going to implement this system of curriculum development; (5) so that teachers at LAP. can attend; and (6) on writing learning packages.

7 (B) Improvements could be made in the content and methods of workshop: (1) would benefit and increase feedback of workshop staff if familiar with tools and equipment and their use and operation; (2) needed more time to cover the material; (3) bothered by auditor's attempts at instruction; (4) needed to have learning materials in my content area (books, equipment, etc.) with me when writing learning exercises; (5) participants should have been encouraged to consult professionals while developing content material for each area; (6) introductory material was too lengthy--could have been simplified; (7) time was wasted on superfluous exercises ; and (8) did not like being led (or allowed to 'discover') concept of individualized learning packages.

4 (C) Need more information on Center--its goals and plans: (1)is this the direction we are going at the Skills Center in September, 1974? (2) need answers to the many, many questions about the Plant, moving, etc., (3) what is curriculum completion date, and will expert writers be available to put it all together? (4) need time to complete curriculum development before September, 1974.

4 (D) Improvements could be made in Workshop Management: (1) like to evaluate results of other RCA-Dallas conducted workshops; (2) like more advance plan of direction that the workshop sessions take--like to know the reasons for each session and how it fits into the overall plan; (3) workshop staff needs to exercise more control over conflicts of expertise, and (4) need advisory council member at workshops if possible.

4 (E) More emphasis on learning modules, or packages, needed--clear, concise examples distributed to each workshop participant, demonstration of how a set of learning packages operates in the classroom, and introduction to learning packages presented at beginning of workshop.

1 (F) Other: Need advisory council soon!